Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

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A New Licence

Ontario Power Generation, Inc. (OPG)

Application for a Licence to Construct a BWRX-300 Reactor at the Darlington New Nuclear Project Site (DNNP)

Commission Public Hearing

Part 1

Scheduled for:

02 October 2024

Submitted by:

CNSC Staff

Nouveau permis

Ontario Power Generation Inc. (OPG)

Demande de permis de construction d'un réacteur BWRX-300 sur le site du projet de nouvelle centrale nucléaire de Darlington (PNCND)

Audience publique de la Commission

Partie 1

Prévue pour:

2 octobre 2024

Soumis par:

Le personnel de la CCSN

e-Doc 7137273 (WORD)
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Summary

This CMD presents information about the following matters of regulatory interest with respect to Ontario Power Generation Incorporated, herein known as OPG:

- CNSC staff's review, assessment, and recommendation regarding the request by Ontario Power Generation (OPG) to issue a power reactor construction licence (PRCL) for one Boiling Water Reactor (BWR) X-300 at the Darlington New Nuclear Project (DNNP) site.

CNSC staff recommend the Commission:

- **Determine** that, pursuant to paragraphs 24(4)(a) and (b) of the *Nuclear Safety and Control Act* that OPG:
  - Is qualified to carry on the activities authorised by the licence.
  - Will make adequate provision for the protection of the environment, the health and safety of persons, and the maintenance of national security measures required to implement international obligations to which Canada has agreed.
- **Issue**, pursuant to section 24 of the *Nuclear Safety and Control Act*, a PRCL authorising OPG to carry out the activities listed in Part IV of the proposed licence from April 1, 2025, to March 31, 2035.
- **Accept** OPG's Licence to Construct (LTC) Preliminary Decommissioning Plan and associated Financial Guarantee.

Résumé

Le présent CMD fournit de l'information sur les questions d'ordre réglementaire suivantes concernant Ontario Power Génération Incorporated (OPG), ci-après dénommée OPG :

- L'examen, l'évaluation et les recommandations du personnel de la CCSN concernant la demande d'OPG qui souhaite obtenir un permis de construction d'un réacteur de puissance pour un réacteur à eau bouillante BWRX-300, sur le site du projet de nouvelle centrale nucléaire de Darlington (PNCND).

La Commission pourrait considérer :

- **Déterminer** que, conformément aux alinéas 24(4)a) et b) de la *Loi sur la sûreté et la réglementation nucléaires*, OPG :
  - Est compétente pour exercer les activités autorisées par le permis
  - Prendra les mesures voulues pour protéger l'environnement, préserver la santé et la sécurité des personnes, maintenir la sécurité nationale et respecter les obligations internationales que le Canada a assumées.
- **Délivrer**, conformément à l'article 24 de la *Loi sur la sûreté et la réglementation nucléaires*, un permis de construction qui autorisera OPG à exercer les activités énumérées à la Partie IV du permis proposé et qui sera valide du 1 avril 2025 au 31 mars 2035.
- **Accepter** le plan préliminaire de déclassement et la garantie financière connexe qui accompagnent le permis de construction d'OPG.

- **Delegate** authority to CNSC staff as set out in subsection 5.4.
- **Determine** whether, taking into consideration the information provided in this CMD and any other relevant information forthcoming, the CNSC, as an agent of the Crown, has upheld the honour of the Crown and fulfilled its obligations to consult and, where appropriate, accommodate Indigenous peoples, pursuant to section 35 of the *Constitution Act, 1982*.

- **Déléguer** au personnel de la CCSN le pouvoir décrit à la sous-section 5.4.
- **Déterminer** que la CCSN si, compte tenu des informations fournies dans le CMD et de toute autre information pertinente à venir, en tant que mandataire de la Couronne, a respecté l'honneur de la Couronne et a rempli ses obligations de consulter et, le cas échéant, d'accommoder les peuples autochtones, conformément à l'article 35 de la *Loi constitutionnelle de 1982*.

The following items are attached:

- The proposed PRCL 32.00/2035
- The draft Licence Conditions Handbook (LCH)
- The current PRSL 18.00/2031
- Current Status of Joint Review Panel Recommendations
- CNSC Staff's *Indigenous Consultation Report for the Darlington New Nuclear Project Licence to Construct Application*

Les pièces suivantes sont jointes :

- Le permis proposé, PRCL 32.00/2035
- Le manuel des conditions de permis proposé, PRCL-LCH-DNNP
- Le permis actuel, PRSL 18.00/2031
- L'état actuel des recommandations de la Commission d'examen conjoint
- Rapport de consultation autochtone du personnel de la CCSN concernant la demande de permis de construction pour le nouveau projet nucléaire de Darlington

Signed/Signé le

28 June 2024 / 28 juin 2024

Eaton, SarahJane

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Plain Language Summary

Referenced documents in this CMD are available to the public upon request, subject to confidentiality considerations. Some documents referenced in this CMD may also be available to the public on the Government of Canada's DNNP Open Government Portal website.

Background

In October 2022, Ontario Power Generation (OPG) submitted a licence application for the construction of a single Boiling Water Reactor X-300 ("BWRX-300") at the Darlington New Nuclear Project (DNNP) site, located in the Municipality of Clarington, Ontario. The DNNP site is located within the larger Darlington Nuclear (DN) site, on the north shore of Lake Ontario, and adjacent to the existing Darlington Nuclear Generating Station (DNGS).

The Darlington Nuclear site is located on the lands and waters of the Michi Saagiig Anishinaabeg, covered by the Gunshot Treaty (1877-88), the Williams Treaties (1923), and the Williams Treaties First Nations Settlement Agreement (2018).

In January 2024, the Commission held a Public Hearing on the applicability of the BWRX-300 reactor to the DNNP Environmental Assessment (EA). In April 2024, the Commission determined that the BWRX-300 reactor was applicable to the EA.

The submission of an application for a licence to construct triggered the Crown's duty to consult and, where appropriate, to accommodate Indigenous peoples whose potential or established Indigenous and/or Treaty rights, enumerated under section 35 of the *Constitution Act (1982)*, have the potential to be impacted by the proposed project. Before the Commission can issue a licence for the construction of the BWRX-300 reactor, it must be satisfied that the duty to consult has been adequately discharged.

Indigenous Consultation and Engagement

As an agent of the Government of Canada, and as the lifecycle nuclear regulator, the CNSC recognises and understands the importance of building relationships with Indigenous peoples in Canada. The CNSC's goal is to build partnerships and trust with Indigenous Nations and communities through collaborative ongoing engagement activities, related to CNSC-regulated facilities and activities of interest within their traditional and/or Treaty territories.

CNSC staff have aimed to conduct a thorough, transparent, flexible, and collaborative consultation and regulatory licensing review of OPG's DNNP Licence to Construct application to date. A summary of the Indigenous consultation and engagement activities is provided in Section 3 – *Indigenous Nations and Communities Consultation and Engagement*; however, detailed information is provided in *CNSC Staff's Indigenous Consultation Report* accompanying this CMD.

Prior to Part 2 of the DNNP Licence to Construct Hearing, a supplemental submission will be provided to the Commission as part of the public record. This will include an update on consultation efforts since the publication, with all identified Indigenous Nations and communities, updated issues tracking tables, and finalised Rights Impact Assessments. Finally, this supplemental submission will include CNSC staff's conclusions and recommendations with regards to Consultation and impacts to Indigenous and/or Treaty rights.

CNSC Staff Conclusions

CNSC staff conducted assessments of OPG's application including a review of the DNNP EA, the safety case for the BWRX-300 reactor as described in the *Preliminary Safety Analysis Report* (PSAR), as well as extensive reviews of PSAR supporting documentation.

CNSC staff have concluded that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. The proposed licence contains facility-specific conditions which require OPG to provide additional detailed information, prior to the removal of regulatory hold points.

Based on its assessment, CNSC staff determined that OPG will make adequate provisions for the protection of people and the environment. CNSC staff are satisfied that OPG's application for a licence to construct a single BWRX-300 reactor at the DNNP site demonstrates adequate provisions, through OPG's commitments, to carry out the proposed construction activities, and establishes an adequate licensing basis for construction.

CNSC Staff Recommendations

Following CNSC staff's comprehensive review, as summarised in this CMD, CNSC staff have determined that OPG is qualified to carry out the proposed activity of constructing a single BWRX-300 reactor, and will make adequate provision for the protection of the environment, the health and safety of persons, and maintain national security and measures required to implement international obligations to which Canada has agreed. Therefore, CNSC staff recommend that, once the Commission has determined the duty to consult has been adequately discharged, the Commission issues a new Power Reactor Construction Licence.

Part 1

This Commission Member Document (CMD) is presented in 2 parts.

Part 1 includes:

1. an overview of the matter being presented;
2. overall conclusions and overall recommendations;
3. general discussion pertaining to the safety and control areas (SCAs) that are relevant to this submission;
4. discussion about other matters of regulatory interest; and
5. appendices material that complements items 1 through 4.

Part 2 provides all available information pertaining directly to the current and proposed licence and associated draft *Licence Conditions Handbook.*

1. OVERVIEW

1.1 Background

The Darlington Nuclear site is located on the north shore of Lake Ontario and is located on the lands and waters of the Michi Saagiig Anishinaabeg, covered by the Gunshot Treaty (1877-88), the Williams Treaties (1923), and the Williams Treaties First Nations Settlement Agreement (2018). The site is approximately 10 km east of Oshawa and 65 km east of Toronto.

The Darlington nuclear site is owned and operated by the licensee, OPG, a Canadian corporation, whose head office is in Toronto, Ontario. The existing site consists of the Darlington Nuclear Generating Station (DNGS), home to four 881-megawatt Canada Deuterium Uranium (CANDU) reactors, which came into service between 1990 and 1993. The site is also home to a tritium removal facility, which is designed to reduce levels of radioactive tritium from the heavy water used in the moderator and primary cooling circuit.

The portion of the site for development of the Darlington New Nuclear Project (DNNP) site is primarily the easterly one third of the overall site (Figure 1-1). It is bounded by the site property limits on the east and north boundaries, by Lake Ontario to the south, and by Holt Road to the west.

Figure 1-1: Aerial Photo of the Darlington New Nuclear Site (Source: OPG)

The DNNP site is operated by OPG under a Power Reactor Site Preparation Licence (PRSL) 18.00/2031 [R1-1], and its associated *Licence Conditions Handbook* (LCH).

1.2 Environmental Protection Review and the DNNP Environmental Assessment

As described in CNSC staff's CMD 24-H2 [R1-2], in 2006 OPG submitted a preliminary application for a Licence to Prepare Site (LTPS) at the Darlington site, for up to four Class IA nuclear power reactors with a combined net output of 4800 MW (electric). The project was referred to a Joint Review Panel (JRP) under the *Canadian Environmental Assessment Act (1992)* and OPG submitted its Environmental Impact Statement (EIS) and an updated LTPS application in September 2009.

The JRP conducted a 17-day public hearing in the Municipality of Clarington between 21 March and 08 April 2011, which addressed themes including aquatic biota and habitat, radiological and non-radiological emissions, human health, land use and management, and the management of nuclear wastes. In August 2011, the JRP concluded in its review of the evidence to support the proposed project and issued its report on the EA for the DNNP, stating that:

> "The Panel concludes that the Project is not likely to cause significant adverse environmental effects, provided the mitigation measures proposed and commitments made by OPG during the review and the Panel's recommendations are implemented."

The JRP directed 67 recommendations to various responsible federal authorities, to the Province of Ontario, and the Municipality of Clarington. In May 2012, the Government of Canada produced a response report to the EA and accepted or accepted the intent of all recommendations within its jurisdiction[1]. These recommendations span the lifecycle of the project, focusing on the site preparation, construction, and operations phases. The current status of the JRP Recommendations is outlined in Appendix D.1 – *Status of OPG DNNP Commitments*, and is available on the CNSC website. The Government of Canada concluded, pursuant to the Minister of Environment's authority, that the DNNP was not likely to result in significant adverse environmental effects. In August 2012, the Commission issued a 10-year power reactor site preparation licence to

[1] In the published Government Response, the Government of Canada defines "accept" and "accept the intent" as follows: "*Where the Government of Canada 'accepts' a recommendation, it means that the Government of Canada fully approves the recommendation and agrees to implement it as written. Where the Government of Canada 'accepts the intent of a recommendation,' the Government of Canada agrees with the underlying spirit of the recommendation but may not implement it precisely as written by the Joint Review Panel. […] Where the Government Response accepts or accepts the intent of these recommendations, it is understood that the JRP's recommendations will be given full and fair consideration by the Canadian Nuclear Safety Commission through future regulatory activities.*"

OPG as a result. The Commission renewed the licence for a 10-year period following a public hearing in June 2021 [R1-3]. The site preparation licence allows for site preparation activities but does not allow for construction of nuclear-related structures or systems.

The JRP recommended that, once a reactor technology was selected, OPG review the chosen technology against the conclusions of the EA and that the Commission determine whether the technology was bound by the EA prior to proceeding with any licensing decision. In accordance with the Government of Canada's response to JRP Recommendation #1, in January 2024, a one-part public hearing was conducted to determine whether the EA was applicable to OPG's selected reactor technology.

In April 2024, the Commission issued its *Record of Decision* [R1-4] where it determined that the BWRX-300 reactor technology was not fundamentally different than the technologies considered in the EA, and that a new EA was not required. The EA remains valid.

1.3 OPG Application

Pursuant to the *Nuclear Safety and Control Act*, the *General Nuclear Safety and Control Regulations* (GNSCR), and the *Class I Nuclear Facilities Regulations* (C1NFR) in October 2022 OPG submitted an application for a Licence to Construct a single GE Hitachi (GEH) Boiling Water Reactor (BWR) X-300 at the DNNP site.

OPG's application also contained six (6) additional packages of documentation, grouped as follows:

- Package #1 covering various Management Aspects of the proposed project.
- Package #2 covering various Design and Safety Analysis aspects of the proposed project, including required safety analysis reports and assessments (see subsection 2.4 – *Safety Analysis*).
- Package #3 covering various Security-related aspects of the proposed project. This documentation is classified and will not be discussed in this CMD.
- Package #4 covering the revision to the Environmental Monitoring and Environmental Assessment Follow-Up program (see subsection 2.8 – *Environmental Protection*).
- Package #5 covering several key Operations aspects of the proposed project, including waste management plans (see subsection 2.10 – *Waste Management*) and radiation protection aspects (see subsection 2.6 – *Radiation Protection*).

- Package #6 covering various aspects focused on the Construction and Commissioning program (see subsection 2.3.2.1 – *Conduct of Licensed Activity: Construction and Commissioning Programs*).

To aid with the transparency of information and the sharing of information with Indigenous Nations and communities and the public, CNSC staff encouraged OPG to post as much publicly available information on its website as possible. In addition, CNSC staff created a dedicated website on the Government of Canada's Open Government portal, where the public and Indigenous Nations and communities could request copies of OPG's documents, CNSC correspondence, and CNSC information requests to OPG. Where possible, full documents were provided for direct download.

1.4 Project Overview

OPG's application describes the DNNP as a multi-year construction project for a single BWRX-300 and associated support structures at the DNNP site. The proposed construction of the BWRX-300 will be completed in a phased approach, with major activities summarised in Table 1-1 below.

Table 1-1: Major Activities in Each DNNP Project Phase

Project Phase	Examples of Activities
Excavation below 78 metres above sea level (masl)	• Excavation of a vertical shaft to bedrock (approximately 53 masl) to support eventual Reactor Building construction. • Excavation of a vertical shaft to below the bed of Lake Ontario to support tunnelling for the Condenser Cooling Water (CCW) system. • Excavation of an additional vertical shaft to allow for retrieval of the tunnel boring machine at the proposed location of the DNNP Forebay.
Construction of Civil Structures	• Tunnelling under the Lake Ontario lakebed to construct the CCW intake and outlet tunnels, and associated tunnel support structures. • Construction of a bulkhead in the CCW tunnel to separate intake and outlet structures. • Assembly of Steel-Plate Concrete Composite structures for the Reactor Building foundation. • Emplacement of the Reactor Building foundation and associated measures to affix it to bedrock. • Construction of the Reactor Building, Turbine Building, and associated civil structures. • Construction of the Conventional Island (Radwaste Building, Control Building, Reactor Auxiliary Bay) and associated civil structures.

Project Phase	Examples of Activities
Construction and Installation of Nuclear Supporting Systems	• Continued construction of the Reactor Building, Turbine Building, and associated internal civil structures. • Installation of nuclear supporting systems and components. • Connection of nuclear supporting systems and components to control and monitoring services. • Installation of major components of the Main Steam System and Condensate and Feedwater Systems, including the associated piping lines and components.
Installation of the Reactor Pressure Vessel	• Installation of the fabricated Reactor Pressure Vessel (RPV) into containment. • Connection of Main Steam and Feedwater system supply lines, to connect to the Conventional Island and Nuclear Island systems. • Connection of the RPV to associated control, monitoring, and standby components.
Fuel-out Commissioning	• Testing of installed pressure retaining systems and components. • Testing of structures, systems, and components.

1.5 CNSC Regulatory Approach to First-of-a-Kind Technologies

The CNSC has been preparing to regulate novel technologies —including advanced reactors— for several years, as described in CNSC staff's CMD 21-M5 – *Presentation from CNSC Staff: Regulatory Readiness*, dated January 2021 [R1-5]. This preparation has included the use of the Vendor Design Review, which enables CNSC staff to provide feedback to a vendor early in the design process to ensure that Canadian regulatory requirements are met, whilst also providing an opportunity for CNSC staff to understand novel reactor design features and resulting in greater regulatory efficiency and predictability. This preparation has also included expansion of collaboration opportunities with other international regulators who have experience with regulating reactor designs currently not operated in Canada. CNSC staff have been able to leverage these opportunities from regulatory agencies in the United States, the United Kingdom, and others directly through training courses, staff exchanges, and by collaboratively publishing joint technical reviews.

As is described in the *Nuclear Safety and Control Act* (NSCA) and the *Class I Nuclear Facilities Regulations*, the lifecycle of a facility is broken out into distinct licensing phases: Site Preparation, Construction, Operation, and Decommissioning. While these can be approached as separate and distinct phases,

there is an overlap between the licensing phases and activities authorised by a licence, enabling a fluid transition between successive phases. The CNSC applies a risk-informed approach to regulation focusing on the safety risks for each licensing phases. For construction, this is primarily the conventional safety risk for constructing the reactor, as there is typically no nuclear material on site and therefore the radiological risk at this stage is negligible.

The NSCA and its associated regulations outline Canadian regulatory requirements, with regulatory documents (REGDOC) and licence application guides outlining CNSC staff expectations for how to meet regulatory requirements. While some REGDOCs are specific to a particular licensing phase, many are focused on the safe operation of a facility rather than safe construction. Recognising the primary responsibility for safety remains with the applicant or licensee, regulatory expectations contained in a REGDOC can be addressed through a graded approach, with flexibility to provide additional information when the design is completed, the facility is constructed, and whether the licensee is proposing to apply for the operational phase. As an example of this principle, regulatory expectations in REGDOCs for construction specify an applicant provides a description of its maintenance program, whereas for the operations phase an applicant must describe in full the maintenance program.

The Licensing Basis

The CNSC's approach to first-of-a-kind technologies is consistent with the overall approach to regulation, where refinement of the safety case is permitted whilst ensuring that the applicant remains within its licensing basis set out by the Commission. The licensing basis sets out the boundary conditions for a regulated activity.

Should the Commission issue OPG a construction licence, OPG's application, the *Preliminary Safety Analysis Report* (PSAR), and underlying documentation describing how the regulatory requirements and expectations are met will be considered as the licensing basis for the facility.

Compliance Oversight for First-of-a-Kind Technologies

First-of-a-kind technologies require extensive oversight throughout the detailed design and construction project phases to confirm that construction activities are completed safely and that the as-built design accurately represents the safety case. This is achieved through a phased construction and qualification program that confirms the design meets applicable regulatory requirements and expectations.

CNSC staff are proposing a construction licence with conditions including regulatory hold points as part of the compliance oversight strategy for the DNNP. The use of hold points permits detailed design progression and phased construction whilst ensuring conditions set out in the licence have been satisfied

at key milestones before proceeding with licensed activities. This allows a more agile approach while always ensuring safety.

The CNSC has a history of successfully implementing regulatory hold points for projects such as the refurbishment of the CANDU reactors at the Darlington Nuclear Generating Station (DNGS) and the Bruce Power Major Component Replacement. Informed by this operating experience, CNSC staff have developed robust processes to ensure all necessary verification activities have been conducted before seeking approval of the Commission, or consent of a person authorised by the Commission, for the removal of the regulatory hold point. The removal of a regulatory hold point also requires the licensee to submit evidence that all commitments related to the hold point have been completed.

International Benchmarking

International benchmarking shows that the CNSC's regulatory approach is consistent with practices implemented by other international regulators, where applicants are required to demonstrate that the facility can be safely constructed whilst the design is being finalised and equipment and services are being procured. In consideration of operational experience from other recent first-of-a-kind projects (e.g., the United Arab Emirates Barrakah NPP, Georgia Power's Vogtle NPP), CNSC staff note the designs were not completed when the construction permits were issued, and the regulatory agencies reviewed the evolution of the design throughout the construction phase.

1.6 CNSC Staff Assessment of OPG's Application

The DNNP is a first-of-a-kind project for Canada, in that this specific reactor has never been built, and the CNSC has thus far only regulated pressurised heavy water power reactors. The BWRX-300 is described by GEH as an "evolution of existing BWRs in operation throughout the world." CNSC staff note that while aspects of this design are evolutionary from previous generations, there are novel features of this design. The CNSC's performance-based regulatory framework is well-suited for the evaluation of both conventional and novel reactor features.

Using a risk-informed approach, CNSC staff conducted a thorough review of OPG's application using modern codes and standards. CNSC staff's assessment of OPG's technical documentation and safety assessments was focused on the regulatory requirements from the NSCA and its associated regulations, supported by regulatory expectations outlined in various REGDOCs, standards and codes published by the Canadian Standards Association Group (CSA) and International Atomic Energy Agency (IAEA) standards and guidance. In addition, given the extensive operating experience with regulation of BWRs, some United States Nuclear Regulatory Commission (USNRC) technical documents provided additional technical criteria and guidance.

Through the conduct of the technical review, CNSC subject matter experts participated in numerous technical meetings with OPG and GEH experts, to

provide clarification and explanation of CNSC's regulatory requirements and resolve outstanding issues. CNSC staff documented each comment and question raised during its review in Requests for Information, to which OPG was requested to provide substantive responses. The completed Requests for Information are documented in the DNNP Open Government Portal.

Where beneficial to add efficiency to CNSC staff's review of OPG's application, CNSC staff collaborated with international regulators such as the USNRC through memoranda of cooperation, to conduct joint reviews of specific, novel, features of the BWRX-300. Joint reports produced through this memorandum of cooperation can be found on the USNRC website.

Section 2 of this CMD describes, on an SCA basis, CNSC staff's review of how OPG's design met regulatory requirements (i.e., the requirements in the regulations for a Licence to Construct), as well as conclusions resulting from the review. Each section also describes how CNSC will ensure continuous oversight of the BWRX-300 design as it continues to progress. This is imperative for a first-of-a-kind project, as is the case with the BWRX-300.

CNSC staff conducted consultation and engagement with Indigenous Nations and communities regarding the DNNP licence to construct application. A summary of the Indigenous consultation and engagement activities is provided in Section 3 – *Indigenous Nations and Communities Consultation and Engagement*; however, detailed information is provided in *CNSC Staff's Indigenous Consultation Report* accompanying this CMD.

CNSC staff determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. As outlined in the proposed construction licence and the draft *Licence Conditions Handbook*, there are several areas where OPG will be required to provide additional information. These commitments are detailed throughout this CMD, summarised in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*, and included as licensing basis document *BWRX-300 Licensing Regulatory Actions* under site-specific licence condition 15.3. Should the Commission issue a licence, this document will be included in the licensing basis to verify that OPG has met its commitments prior to applying for the removal of a regulatory hold point.

Part 2 of this CMD also provides the proposed licence and draft *Licence Conditions Handbook*. As outlined in the draft *Licence Conditions Handbook*, CNSC staff identified which commitments for construction must be completed prior to the removal of a regulatory hold point. CNSC staff are proposing three (3) regulatory hold points (RHP) at specific project milestones, aligned with key stages in OPG's proposed construction schedule, described in the LCH as follows:

- Regulatory Hold Point 1: Installation of the Reactor Building (RB) Foundation. The removal of this RHP would authorise OPG to place the

foundation for the RB and commence civil construction of the RB structure, internal civil structures, and internal RB systems and components.

- Regulatory Hold Point 2: the Installation of the Reactor Pressure Vessel (RPV). The removal of this RHP would authorise OPG to install the RPV and associated structures and components, as well as complete the appropriate installations of critical components, and conduct limited component testing.
- Regulatory Hold Point 3: Fuel-Out Commissioning. The removal of this RHP would authorise OPG to conduct full-scale testing and commissioning of installed structures, systems, and components.

Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* outlines which OPG commitments must be completed before OPG can apply for the removal of a regulatory hold point. Commitments linked to the regulatory hold points are those that are essential for CNSC staff to verify compliance with regulatory requirements and expectations related to the safety analysis and design of structures, systems, and components (SSC) that are important to safety.

The process for the removal of a regulatory hold point is well-established, based on experience gained from both the Darlington NGS and Bruce NGS refurbishments. As described in licence condition 15.3 of the draft *Licence Conditions Handbook,* OPG must submit sufficient evidence that all pre-requisites have been met. This includes:

- All relevant commitments identified in the *BWRX-300 Licensing Regulatory Actions* document are complete.
- Any specified training for workers is completed and staff are qualified.
- Specified SSCs meet the quality and completion requirements of CSA N286 – *Management Systems Requirements for Nuclear Facilities*.
- Any non-conformances or open items for the regulatory hold point have been addressed.
- Verification by CNSC staff that all activities and commitments required prior to regulatory hold point have been successfully completed.

If CNSC staff are satisfied the pre-requisites have been met, the delegated authority, will release the hold point and provide notice to the licensee, the public, and Indigenous Nations and communities.

CNSC staff have developed a comprehensive compliance oversight plan to ensure the proposed licensed activities are conducted safely, that OPG fulfills commitments made in its application, and remains within its licensing basis. CNSC's regulatory oversight will continue throughout the project, providing

oversight by means of inspections, compliance assessments, desktop reviews, and routine monitoring.

Given the iterative nature of design evolution, the validation of safety assessments and their predictions, as well as consequential changes to the facility design will be part of ongoing monitoring throughout the licence period. CNSC staff will continue to conduct technical reviews of submissions as outlined in the *BWRX-300 Licensing Regulatory Actions* document and will track the results of these reviews.

CNSC staff will also continue to monitor and assess OPG's activities, as well as the fulfilment of commitments to address JRP recommendations, as documented in NK054-REP-01210-00078 – *Darlington New Nuclear Project Commitments Report* [R1-6], through ongoing regulatory oversight activities. The fulfillment status of these commitments will be reported on the CNSC website.

1.7 Potential Future Licensing Considerations

OPG currently holds a Power Reactor Site Preparation Licence that authorises the preparation of the DNNP site for up to four reactors. With this application, the focus of the CMD is on the proposal to construct a single BWRX-300 unit on the site. Should OPG propose proceeding with construction of additional units, a separate application and subsequent licensing decision will be required.

The construction of a radioactive waste storage facility is not proposed as part of this application, and is also not a subject addressed by this CMD. Should OPG propose the construction of a radioactive waste storage facility on the DNNP site in future, a separate application and subsequent licensing decision will be required. In addition, OPG has indicated an intent to apply for a Licence to Operate as early as 2026.

1.8 Overall Conclusions

CNSC staff have assessed OPG's licence application, including the preliminary design information, and conclude that it is sufficient to recommend the Commission issue a licence to construct.

As outlined in the proposed licence and the draft *Licence Conditions Handbook*, OPG will be required to provide additional information prior to the removal of the regulatory hold points. These commitments are detailed throughout this CMD, and are summarised in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*. CNSC staff reviewed OPG's request for a 10-year licence to construct period and determined that the period requested was adequately substantiated.

A summary of CNSC staff's consultation and engagement activities to date is provided in section 3 – *Indigenous Nations and Communities Consultation and Engagement*; however, full details are provided in the accompanying *Indigenous*

Consultation Report for the Darlington New Nuclear Project Licence to Construct Application.

In addition, CNSC staff's recommendations on the Duty to Consult and, where appropriate, Accommodate will be included in a supplemental submission from CNSC staff to the Commission, on the public record prior to Part 2 of the Licence to Construct public hearing. The recommendations will be based on the outcomes of additional consultation efforts and Rights Impact Assessments, with collaboration and input from the potentially impacted Indigenous Nations and communities.

CNSC staff reviewed OPG's preliminary decommissioning plan (PDP) and confirmed that it met applicable regulatory requirements. CNSC staff reviewed the associated financial guarantee and confirmed that adequate funds are available to cover decommissioning costs outlined in the PDP.

1.9 Overall Recommendations

CNSC staff recommend the Commission:

1. **Conclude**, pursuant to paragraphs 24(4)(a) and (b) of the *Nuclear Safety and Control Act* (NSCA) in that the applicant:

    a) Is qualified to carry on the activities authorised by the licence.
    b) Will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

2. **Authorise** OPG to construct a single BWRX-300 reactor at the DNNP site, subject to the conditions with which OPG must comply, as articulated in the proposed construction licence and draft proposed accompanying *Licence Conditions Handbook*.

3. **Issue** the proposed PRCL 32.00/2035.

4. **Accept** OPG's Preliminary Decommissioning Plan and associated Financial Guarantee.

5. **Delegate** authority to the Executive Vice President and Chief Regulatory Operations Officer (EVP-CROO) for the administration of the regulatory hold points, as set out in section 5.4 .

6. **Determine** whether, taking into consideration the information provided in this CMD and any other relevant information forthcoming, the CNSC, as an agent of the Crown, has upheld the honour of the Crown and fulfilled its obligations to consult and, where appropriate, accommodate Indigenous peoples, pursuant to section 35 of the *Constitution Act, 1982*.

Should the Commission accept CNSC staff's recommendations, CNSC staff will issue the DNNP *Licence Conditions Handbook*, as specified in Part 2.

2. GENERAL ASSESSMENT OF SCAS

CNSC staff assessments are presented in the following sections and are based on a comprehensive review of OPG's licence to construct application and supporting documentation. This section also includes CNSC staff evaluation of the measures to be implemented by OPG during the proposed licence period. CNSC staff used REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility (version 2)* [R1-7] that references the NSCA and associated regulations and applicable REGDOCs and CSA standards as the primary criteria set for the licence assessment.

In addition, CNSC REGDOC-2.5.2 – *Design of Reactor Facilities (version 1)* [R1-8] provides primary regulatory expectations for CNSC staff's review of OPG's application regarding the design of the BWRX-300.

This CMD is organised following the topic areas outlined in REGDOC-1.1.2. This section captures a discussion of twelve (12) of the fourteen (14) SCAs within the CNSC framework (as described in Appendix C), provided in Sections 2.1 through 2.12.

Twelve (12) SCAs were deemed applicable to the proposed DNNP licence to construct. The remaining two (2) SCAs were deemed not relevant for the following reasons:

- As indicated in REGDOC-1.1.2, the Fitness for Service SCA considerations are addressed within the Physical Design SCA, and commissioning considerations are addressed within the Operating Performance SCA.
- The Packing and Transport SCA, since OPG's application did not request authorisation of use of nuclear substances and radiation devices at the site, there are no packaging or transport requirements.

Overall, based on the regulatory licensing review conducted, CNSC staff conclude that OPG has met regulatory requirements and has appropriate plans in place to ensure the expectations outlined in REGDOC-1.1.2 and other associated REGDOCs are met and implemented.

Select figures and data tables presented throughout the CMD and in Appendix A have been incorporated from the available figures presented in GE Hitachi's publicly accessible *BWRX-300 General Description* [R1-9] document.

CNSC staff also identified the following matters that are relevant to this licence application, beyond consideration of the SCAs. Table 2-1 below identifies these other matters of regulatory interest and provides a location to staff's discussion in this CMD.

Table 2-1: Other Matters of Regulatory Interest Relevant to this CMD

Area	Location in the CMD
Public Engagement	Section 4 – *Public Engagement*
Cost Recovery	Subsection 5.1 – *Cost Recovery*
Financial Guarantees	Subsection 5.2 – *Financial Guarantees*
Nuclear Liability Insurance	Subsection 5.3 – *Nuclear Liability Insurance*
Delegation of Authority	Subsection 5.4 – *Delegation of Authority*

2.1 Management System

The Management System SCA covers the framework that establishes the processes and programs required to ensure an organisation achieves its safety objectives, continuously monitors its performance against these objectives, and fosters a healthy safety culture. The specific areas that comprise this SCA at the DNNP include:

- Management System
- Organisation
- Change Management
- Safety Culture
- Configuration Management
- Records Management
- Supply and Contractor Management

2.1.1 Regulatory Requirements and CNSC Staff Conclusions

The regulatory foundation for the recommendation(s) associated with the Management System SCA includes the following:

- The *Nuclear Safety and Control Act*, subsection 24(4)
- The *General Nuclear Safety and Control Regulations*, sections 27, 28, paragraph 3(1)(k)
- The *Class I Nuclear Facilities Regulations*, paragraph 3(d), 5(c), 3(g).

The regulatory expectations for the recommendation(s) associated with the Management System SCA includes the following:

- REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility (version 2)*, subsection 4.1 [R1-6]
- CSA N286 – *Management System Requirements for Nuclear Facilities (2012)* [R2.1-1].

CNSC staff conclude that OPG and its contract partners have established agreements and arrangements to manage safe conduct of licensed activities at the DNNP. OPG has established programs and project-specific governance subject to continued improvements, in accordance with regulatory requirements as it relates to documented processes, monitoring of activities, organisation, control of work, control of documentation and records, control of contractors and suppliers' activities.

CNSC staff conclude that the applicant has an acceptable management system in place to manage the activities. Further development of detailed management system documented is expected, to ensure OPG and its contract partners manage construction activities, and refine OPG's control of licensed activities, in accordance with regulatory expectations. OPG and its contract partners are

expected to develop, implement, and maintain procedures and conduct licensed activities in accordance with the management system and organisational structure described in the licence application and in response to CNSC staff comments. These commitments are summarised under the "Management System" SCA in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*, and are related to RHP-1: Installation of the Reactor Building foundation.

CNSC staff expect that OPG and its contract partners' documented management systems provide assurance that the engineering details and the programs and procedures will be completed appropriately to the required QA standards and level of detail. CNSC staff will ensure OPG has the necessary updated documentation to proceed with licensed activities and comply with regulatory expectations through a licence condition throughout the construction and commissioning phases.

One standardised licence condition is included in the proposed licence. It is summarised as follows:

- Licence condition 1.1 will require that the licensee implements and maintains a management system.

Compliance verification criteria for this licence condition is included in the draft *Licence Conditions Handbook*.

CNSC staff will conduct compliance assessments to ensure OPG and its contract partners meet all CSA N286 expectations, including those related to quality assurance, effective oversight, safety, and security culture.

2.1.2 Discussion

Paragraph 3(d) of the *Class I Nuclear Facilities Regulations* requires that an application for a licence to construct (LTC) a reactor facility contain the "*proposed management system for the activity to be licensed, including measures to promote and support safety culture*."

This requirement is expanded upon in subsection 4.1, *Management System,* of CNSC regulatory document REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility* [R1-7], which explains the regulatory expectations for the management system at the licence to construct project stage. The application should describe its management system that has been put in place to protect health and safety of workers, the environment, and describe the overall organisational structure.

To meet regulatory requirements for this SCA, OPG is expected to implement and maintain a management system in accordance with CSA standard N286 – *Management System Requirements for Nuclear Facilities (2012 edition)*. OPG has a comprehensive management system, which is in compliance with N286 at the

Darlington Nuclear Generating Station (DNGS), that is subject to routine compliance verification against the expectations of CSA N286.
OPG's performance in this area has been satisfactory as described in the annual Regulatory Oversight Reports for Nuclear Power Generating Stations.

CNSC staff reviewed OPG's management system [R2.1-2] in relation to the activities proposed under the application for a licence to construct for the DNNP including project-specific documentation, organisational structure, and contractor oversight. OPG documents N-CHAR-AS-0002 – *Nuclear Management System* [R2.1-3] and OPG-PROG-00039 – *Project Management* [R2.1-4] describe the overall project's governance hierarchal plans and other relevant management system documentation:

- NK054-PCH-01210-00002 – *Darlington New Nuclear Project Charter* [R2.1-5];
- NK054-PLAN-01210-00008 – *Darlington New Nuclear Project: Program Management Plan.* [R2.1-6]

Documents supporting the implementation and delivery of Project Execution Plans (PEPs) [R2.1-7][R2.1-8] include process control and supporting documents such as Division of Responsibilities, Team Roles and Responsibilities, Contractor Owner Interface Requirements, and the DNNP organizational chart.

CNSC staff note OPG is revising documents previously submitted to CNSC staff to further clarify the project governance hierarchy documentation in response to CNSC staff comments and continual improvement as per OPG's document change process. CNSC staff will review the updated documents when available and expect all OPG documented project governance be implemented by OPG and contract partners in accordance with CSA N286 expectations.

2.1.2.1 Management System

Subsection 4.1.3, *Organization*, of REGDOC-1.1.2 specifies that the applicant is expected to confirm it is in control of the licensed activities, when entering contracts with external organisations.

OPG's management system for DNNP is primarily focused on OPG's oversight of contractors to ensure the work performed meets OPG owner and regulatory requirements. The definition of oversight, and the types of oversight required, are specified in OPG document NK054-PLAN-01210-00100 Sheet 0002 – *DNNP Project Assurance Program Management Plan* [R2.1-9] and OPG is in the process of revising its definition to address CNSC expectations.

The DNNP will utilise an Integrated Project Delivery (IPD) contract model for the LTC phase in collaboration with contract partners including:

- OPG acting as the Project Owner and Licence Holder

- GE Hitachi (GEH) acting as the delegated Design Authority
- AtkinsRéalis acting as the Architect Engineering Firm, and
- Aecon acting as the Constructor.

OPG document NK054-PLAN-01210-00108 (Sheet 1) – *Integrated Project Execution Plan* [R2.1-10] describes the DNNP Integrated Project Delivery activities. Under the IPD model, each contract partner is required to follow their quality assurance program/management system which shall meet the applicable regulatory requirements.

CNSC staff note OPG maintains overall ownership and authority of the DNNP commensurate with the Integrated Project Agreement contract. The OPG Chief Nuclear Officer is accountable for implementation and effectiveness of the nuclear management system to meet the requirements of CSA N286.

Paragraph 5(c) of the *Class I Nuclear Facilities Regulations* requires OPG to submit its construction program. OPG proposes to perform oversight of the construction program as documented in OPG-PROG-0039 and project plans. The construction programs will be issued by contract partners, subject to OPG's engineering oversight. OPG will be required to provide the construction programs for CNSC staff review.

OPG's engineering oversight is described in NK054-PLAN-01210-00035 – *DNNP Engineering Oversight Plan* [R2.1-11]. The oversight activities are graded as Level A, B and C which are correlated to the safety classifications of SSCs specified by GEH as the Design Authority. CNSC staff expect OPG to provide further explanation describing its criteria for classification of certain SSCs and demonstrating effective oversight as the design evolves. Details of this assessment can be found in subsection 2.5.2.2.1 – *Design Quality Assurance*.

NK054-PLAN-01210-00035 also specifies that OPG will review and accept the contract partner deliverables for items identified as critical after commissioning activities. CNSC staff note currently, the review and acceptance of Vendor Technical Documents is described as an option which introduces ambiguity into the process of identifying which Vendor Technical Documents are overseen by OPG and listed in Contractor Owner Interface Requirements. OPG has committed to provide additional clarity to address this comment.

As documented in NK054-PLAN-01210-00100 (Sheet 2) [R2.1-9], the IPD partners' Quality organizations will provide oversight to confirm that their management system is rigorously followed and that all deficiencies are documented in their corrective action system.

NK054-PLAN-01210-00107 – *DNNP Construction Plan* [R2.1-13] describes an overall method for the control of construction activities, including procurement of equipment and services, as well as provides a summary description of construction activities for different buildings. CNSC staff recognises that further

effort will be required by OPG to complete the programs and procedures to manage each construction stage. CNSC staff expect that all necessary DNNP governance and planning documents for construction will be defined and implemented prior to each stage of construction. OPG has committed to submit completion assurance documentation, turnover plans, Construction Declaration, commissioning program and processes and Level 2 Project schedule as the information becomes available.

2.1.2.2 Organisation

CNSC staff reviewed OPG's organisational structure and charts to support the project's governance structure. The organisational chart representing each of the contract partners is documented in NK054-PLAN-01210-00108 (Sheet 16) – *IPD Organization Chart* [R2.1-14].

OPG document NK054-PLAN-01210-00108 (Sheet 17) – *IPD Team Roles and Responsibilities* [R2.1-15] describes the roles and responsibilities for the Leadership, Execution and Different Functions and Support Groups. There is one contract partner position in each IPD team. OPG document NK054-PLAN-01210-00014 – *Roles and Responsibilities for Darlington New Build Engineering* [R2.1-16] describes the roles and responsibilities of the Darlington New Build Engineering organisation.

CNSC staff note DA1-IPDNN-NN-TPVS-PM-0001 – *Darlington Small Modular Reactor: Project Execution Plan (PEP)* [R2.1-8] specifies how the decisions are taken under the IPD model. However, the current revision does not describe in detail the dispute resolution process and the meaning of 'significant decision' as it relates to safety. For example, it is unclear how decisions are made and communicated between the Designer, Constructor and Architect Engineer described in the *IPD Organizational Chart* (i.e., it is unclear how decisions are made and communicated between the Project Leadership Team, Project Management Teams). CNSC staff expect OPG to clarify how inputs from different teams are incorporated into the decision-making process. OPG has committed to providing a revision of this document for CNSC staff review.

The OPG Oversight organisation reports to the IPD Project Leadership Team as described in the *IPD Organization Chart*. CNSC staff expect that OPG Engineering Oversight organization is an independent organization from other contract partners activities and report to a management level that provides Engineers with the authority to perform effective oversight and demonstrate OPG accountability for the licence activities. Currently, NK054-PLAN-00035 – *DNNP Engineering Oversight Plan* does not describe IPD reporting expectations. CNSC staff expect OPG to demonstrate improvement in this area.

OPG document NK054-COI-01210-00002 – *Contractor/Owner Interface Agreement* [R2.1-17] describes the organisational responsibilities within the IPD model and establishes requirements for the identification, review, approval, distribution, and release of documents across organizational boundaries. CNSC

staff note the Contractor Owner Interface Requirements are under development in certain areas and OPG has committed to providing revisions as the documents become available.

CNSC staff note the staffing arrangements and planning are in development and expect that each resource plan will consider the subject-matter expertise for nuclear safety, including "informed customer" capability as per subsections 4.1.3 and 4.5.1 of REGDOC-1.1.2, CSA N286, and other applicable regulatory expectations. OPG committed to provide the OPG DNNP Resource Management Plan and IPD Functional Management plans.

2.1.2.3 Change Management

OPG and its contract partners have issued documentation to describe the management of changes to the project, including design changes. Engineering Change Notifications are processed in accordance with the design change management process described in subsection 2.5.2.2.1 – *Design Quality Assurance*.

OPG has issued various Program Management Plans, to control project changes. OPG will also issue PEPs to control change management processes.

GEH, acting as delegated Design Authority, specifies that changes or modifications to the configuration of the facility during construction will be processed and documented to maintain design requirements, the physical configuration, as well as the configuration information.

CNSC staff conclude that OPG has demonstrated that its change management process, as documented in the Program Management Plans and PEPs, meets regulatory requirements.

2.1.2.4 Safety Culture

Subsection 4.1.5, *Safety Culture*, of REGDOC-1.1.2 requires that an applicant demonstrate their approach to fostering a healthy safety culture in accordance with CNSC REGDOC-2.1.2 – *Safety Culture* [R2.1-18], CSA N286 [R2.1-1], and other applicable regulatory expectations. CSA standard N299.1 – *Quality Assurance Program Requirements for the Supply of Items and Services for Nuclear Power Plants* [R2.1-19] outlines expectations that suppliers shall use Quality Assurance (QA) program to understand and promote a safety culture expected by REGDOC-2.1.2.

N-PROG-AS-0001 – *Nuclear Management System Administration Program* [R2.1-20] describes the programs and processes in place to meet the management system expectations outlined in CSA N286. Effective implementation of the management system ensures achievement of safety objectives and includes fostering a healthy safety culture.

N-PROG-AS-0001 also describes how the requirements apply to "*all workers within OPG supporting licensed activities at nuclear facilities, including corporate organizations, suppliers and contractors for the life cycle of the nuclear facility from initial conception through to the completion of decommissioning*."

CNSC staff review of OPG's application, and its supporting documentation shows that organisations who are contracted to perform construction activities for the lifecycle of the DNNP will be required to meet the regulatory requirements to understand and promote a safety culture as applicable to their scope of work.

OPG has committed to fostering a healthy safety culture for the DNNP project as documented in NK054-PLAN-01210-00100 (Sheet 2) – *DNNP Program Assurance Management Plan* [R2.1-9].

CNSC staff note OPG's oversight of contractors' safety culture will be performed using the general processes and oversight procedures in OPG-PROG-0009 – *Items and Services Management* [R2.1-21]. NK054-PLAN-01210-00035 [R2.1-11] describes the oversight activities to be conducted for the design, procurement, and construction phases of the project.

CNSC staff conclude that OPG has adequately demonstrated that its approach to fostering a healthy safety culture will be in accordance with CSA N286 and REGDOC-2.1.2, and other applicable regulatory expectations. CNSC staff will conduct compliance assessments during the construction phase to ensure that contractors meet regulatory expectations, including those related to safety and security culture.

2.1.2.5 Configuration Management

Subsection 4.14, *Configuration Management and Change Control*, of CNSC regulatory document REGDOC-1.1.2 outlines expectations that the licensee to describe provisions to establish and maintain control of the facility's configuration throughout its lifecycle. The licensee is expected to demonstrate adherence to CSA standard N286.10 – *Configuration Management for High Energy Reactor Facilities* [R2.1-22] and CSA N286, including ensuring adequate and compatible information management arrangements are in place between contracting organisations for managing, reviewing, transferring, sharing, and releasing configuration information. OPG and its contract partners will be responsible for retention, maintenance, and updating the final as-built plant configuration.

CNSC staff reviewed OPG document NK054-PLAN-01210-00100 (Sheet 18) – *DNNP Document Management Plan* [R2.1-23], which specifies that GEH will maintain configuration management throughout the construction phase, and until the design information is ready to be turned over to OPG. OPG will have the responsibility to retain, maintain, and update the final as-built plant configuration as necessary.

OPG's configuration management processes are specified in program management plans such as NK054-PLAN-01210-00100 (Sheet 18) and in NK054-PLAN-01210-00100 (Sheet 19) – *DNNP Turnover and Commissioning Program Management Plan* [R2.1-24] and NK054-PLAN-01210-00108 Sheet 0026 – *Configuration Management Plan* [R2.1-25].

OPG's requirements for configuration control during construction are detailed in section 7.0 of NK054-PLAN-01210-00107 – *Darlington New Nuclear Project Construction Plan* [R2.1-13]. It is the responsibility on the Constructor to confirm the configuration of the plant from commencement of construction until turnover to commissioning/operations. The Constructor or the Designer are required to initiate Field Initiated Changes for any field changes. The changes will be evaluated and incorporated as approved changes by the Designer into the plant design and configuration (records) or rejected if they do not meet the design intent for Systems, Structures, or Components (SSCs). OPG requires that GEH, as the Design Authority, shall be consulted by contract partners for approval where changes impact licensing basis or facility configuration.

OPG has identified that the DA1-IPD-NN-NN-TPLN-DI-0009 – *Configuration Management Plan (CMP)* [R2.1-26] will verify that management controls are in place to ensure alignment of information and physical configuration with the design basis requirements. This includes ensuring the potential risk of aggregate change on the design basis is managed within the Design Authority. OPG has committed to submit its Configuration Management Plan to CNSC when it is approved.

Overall, CNSC staff conclude that OPG's configuration management process, as applicable to the licence to construct for the DNNP, is documented as required. However, CNSC staff have identified specific documents which require updating to demonstrate that regulatory expectations are met, OPG has committed to providing these updates once they are available.

2.1.2.6 Records Management

CNSC staff reviewed OPG-PROG-0001 – *Information Management Program* [R2.1-27], which establishes the processes for the management, maintenance and final disposition of records and documents, as well as the process for the issuance, distribution, and maintenance and control of governance.

OPG document NK054-PLAN-01210-00100 (Sheet 18) [R2.1-23] describes the processes for transferring documents between GEH and OPG but does not describe the transfer of documents between all contract partners and OPG. OPG has committed to providing this information as it becomes available.

CNSC staff conclude that records management processes as documented meets requirements.

2.1.2.7 Supply and Contractor Management

Subsection 4.1.3, *Organization*, of REGDOC-1.1.2 outlines expectations that the licensee describe how it will oversee contracted work to ensure it is conducted to the required level of quality and safety consistent with CSA N286. The supply chain activities are started at the design phase and CNSC staff expect that CSA N299 [R2.1-19] be used for SSCs important to safety.

CNSC staff note that GEH, as the delegated Design Authority for the BWRX-300 powerblock is the main contractor for the procurement of systems, structures, and components (SSC) important to safety, including constructed modules, while AECON, as the Constructor, performs limited procurement activities. OPG is responsible for oversight of procurement and construction activities. OPG's oversight plans for procurement are still in development and will be provided to CNSC staff once available.

OPG is also responsible for qualifying its contractor partners, and all qualified suppliers and contractors must be listed in OPG's Approved Suppliers List based on the results of OPG's audits. Each contract partner is responsible for qualifying their suppliers or subcontractors, following their respective programs, that have been audited by OPG.

CNSC staff found that OPG performed audits of GEH, AECON, and AtkinsRéalis at the onset of the project and as the project evolved. The audits were comprehensive using criteria CSA N286 and CSA N299 series.

CNSC staff note while GEH intends to use CSA N299 for SSCs important to safety, GEH's definition of important to safety is inconsistent with REGDOC-2.5.2 which may impact the selection of appropriate QA standards for certain SSCs. For example, it appears that I&C will be procured only using ISO 9001 – *Quality Management Systems: Requirements (2015 edition)*.

CNSC staff have raised a concern regarding the selection of QA standards for procurement of SSCs important to safety, which have been initially grouped into Safety Classification (SC) categories: SC1, risk significant SC2, and SC3. The definition of each category, as well as CNSC staff concerns, are specified in subsection A.2.2.6.1 – *Safety Classification*.

At this time, CNSC staff conclude that the selection of QA standards for procurement of SC1 SSCs is acceptable. Procurement of long-lead items involving non-risk significant SC2 and SC3 SSCs, prior to CNSC staff accepting OPG's Safety Strategy, may result in items procured at OPG's risk, with the potential for the items' classification not being accepted by CNSC staff.

OPG committed to provide the documentation for OPG procurement of Long Lead Items, and Long Lead Items specifications for SSCs important to safety and other information related to Long Lead Items per expectations outlined in

REGDOC-2.3.1. In addition, OPG has committed to submit sub-contractors' management plans.

2.1.3 Key References for this SCA

[R2.1-1] CSA Group standard, N286 – *Management System Requirements for Nuclear Facilities*, 2012 edition, reaffirmed in 2022.

[R2.1-2] OPG document, NK054-REP-08130-00004 – *DNNP Licence to Construct Management System Report*, revision R001, dated October 2022.

[R2.1-3] OPG document, N-CHAR-AS-0002 – *Nuclear Management System*, revision 22, dated December 2021.

[R2.1-4] OPG document OPG-PROG-0039 – *Project Management*, revision 2, December 2019.

[R2.1-5] OPG document, NK054-PCH-01210-00002 – *Darlington New Nuclear Project Charter*, revision R001, dated January 2024.

[R2.1-6] OPG document, NK054-PLAN-01210-00008 – *Darlington New Nuclear Project: Program Management Plan*, revision 2, dated November 2023.

[R2.1-7] OPG document, NK054-PLAN-01210-00100 – *DNNP Construction Program Management Plan*, Sheet 9, revision R000, dated March 2022.

[R2.1-8] OPG document, DA1-IPD-NN-NN-TPLN-PM-0001 – *Darlington Small Modular Reactor: Project Execution Plan (PEP)*, revision C02, dated January 2024.

[R2.1-9] OPG document, NK054-PLAN-01210-00100 – *DNNP Project Assurance Program Management Plan*, Sheet 2, revision 2, dated September 2023.

[R2.1-10] OPG document, NK054-PLAN-01210-00108 – *Integrated Project Execution Plan*, Sheet 1, revision 0, dated 13 April 2023.

[R2.1-11] OPG document, NK054-PLAN-01210-00035 – *DNNP Engineering Oversight Plan*, revision R001, dated February 2024.

[R2.1-12] OPG document, NK054-PLAN-01210-00108 – *DNNP Unit 1 Quality Management Plan*, Sheet 3, revision 0, dated 24 April 2023.

[R2.1-13] OPG document, NK054-PLAN-01210-00107 – *DNNP Construction Plan*, revision R000, dated February 2023.

[R2.1-14] OPG document, NK054-PLAN-01210-00108 – *IPD Organization Chart*, Sheet 16, revision 0, dated 01 June 2023.

[R2.1-15] OPG document, NK054-PLAN-01210-00108 – *IPD Team Roles and Responsibilities*, Sheet 17, revision 0, dated 01 June 2023.

[R2.1-16] OPG document, NK054-PLAN-01210-00014 – *Roles and Responsibilities for Darlington New Build Engineering*, revision R001, dated September 2022.

[R2.1-17] OPG document, NK054-COI-01210-00002 – *Contractor/Owner Interface Agreement*, revision 0, dated March 2023.

[R2.1-18] CNSC Regulatory Document, REGDOC-2.1.2 – *Safety Culture*, version 1, published April 2018.

[R2.1-19] CSA Group standard, N299 – *Quality Assurance Program Requirements for the Supply of Items and Services for Nuclear Power Plants*, 2016 edition.

[R2.1-20] OPG document, N-PROG-AS-0001 – *Nuclear Management System Administration*, revision R019, dated May 2021.

[R2.1-21] OPG document, OPG-PROG-0009 – *Items and Services Management*, revision 3, dated October 2018.

[R2.1-22] CSA Group standard, N286.10 – *Configuration Management for High Energy Reactor Facilities*, 2016 edition reaffirmed in 2021.

[R2.1-23] OPG document, NK054-PLAN-01210-00100 – *DNNP Document Management Plan*, Sheet 18, revision R000, dated March 2022.

[R2.1-24] OPG document, NK054-PLAN-01210-00100 – *DNNP Turnover and Commissioning Program Management Plan*, Sheet 19 revision R001, dated March 2023.

[R2.1-25] OPG document, NK054-PLAN-01210-00108 – *Configuration Management Plan*, Sheet 26.

[R2.1-26] OPG document, DA1-IPD-NN-NN-TPLN-DI-0009 *Configuration Management Plan (CMP)* revision R000, dated September 2023.

[R2.1-27] OPG document, OPG-PROG-0001 – *Information Management*, revision 11, dated March 2022.

[R2.1-28] OPG document, NK054-PLAN-01210-00100 – *DNNP Engineering Program Management Plan*, Sheet 4, revision R000, dated March 2022.

[R2.1-29] OPG document, NK054-PLAN-01210-00100 – *DNNP (Project Controls) Program Management Plan*, Sheet 15, revision R000, dated March 2022.

[R2.1-30] OPG document, NK054-PLAN-01210-00100 – *DNNP Supply Chain Program Management Plan*, Sheet 17, revision R000, dated December 2023.

[R2.1-31] OPG document, N-PROG-RA-0003 – *Performance Improvement*, revision R011, dated July 2018.

[R2.1-32] DA1-IPD-NN-NN-TPLN-QA-0001 *Darlington New Nuclear Project Functional Quality Management Plan*.

2.2 Human Performance Management

The human performance management SCA covers the activities that enable effective human performance at nuclear facilities through the development and implementation of processes that ensure licensees have sufficient personnel in all relevant job areas; and that these personnel have the necessary knowledge, skills, procedures, and tools to safely carry out their duties.

The specific areas that comprise this SCA at the DNNP include:

- Human Performance Program
- Personnel Training
- Personnel Certification
- Work Organization and Job Design
- Fitness for Duty

2.2.1 Regulatory Requirements and CNSC Staff Conclusions

The regulatory foundation for the recommendation(s) associated with the Human Performance SCA includes the following:

- The *Nuclear Safety and Control Act*, subsection 24(4);
- The *General Nuclear Safety and Control Regulations*, paragraphs 12(1)(a), 12(1)(b), 17(a), and 17(e);
- The *Class I Nuclear Facilities Regulations*, paragraphs 3(d), 3(d.1), 3(f), 5(l), 5(m).

The regulatory expectations for the recommendation(s) associated with the Human Performance SCA includes the following:

- REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility (version 2)*, subsection 4.2 [R1-6];
- REGDOC-2.2.2 – *Personnel Training* [R2.2-1];
- REGDOC-2.2.4 – *Fitness for Duty, Volume 1: Managing Worker Fatigue (version 1)*; [R2.2-1];
- REGDOC-2.2.4 – *Fitness for Duty, Volume II: Managing Alcohol and Drug Use (version 3)* [R2.2-2]; and
- CSA N286 – *Management System Requirements for Nuclear Facilities (2012)* [R2.1-1].

CNSC staff have reviewed OPG's application and submitted documentation as it relates to the Human Performance SCA and conclude that OPG has met the regulatory requirements described above. In addition, OPG has demonstrated it has appropriate processes and procedures in place for the proposed licensed activities during the construction phase of the project.

Two standardised licence conditions are included in the proposed licence. They are summarised as follows:

- Licence condition 2.1 will require that the licensee implements and maintains a human performance program.
- Licence condition 2.2 will require that the licensee implements and maintains a personnel training and qualification program, commensurate with the level of design detail and proposed licensed activities.

Compliance verification criteria for these licence conditions are included in the draft *Licence Conditions Handbook*.

CNSC staff will conduct compliance verification throughout the construction phase of this project to verify that sufficient qualified staff are employed to carry out the proposed licensed activities. Additionally, CNSC staff will conduct compliance verification activities focused on Fitness for Duty and Human Performance Program requirements.

2.2.2 Discussion

2.2.2.1 Human Performance Program

CNSC staff reviewed OPG's application and supporting documents with respect to the human performance program. OPG's application has described considerations and measures taken by OPG to satisfy the application human performance regulatory requirements.

OPG has a comprehensive human performance program in place at the Darlington Nuclear Generating Station (DNGS), that is subject to routine compliance verification against the expectations outlined in CSA N286. OPG's performance in this area has been satisfactory as described in the annual Regulatory Oversight Reports for Nuclear Power Generating Stations.

N-PROG-AS-0002 – *Human Performance Program* [R2.2-3] identifies the overarching human performance program objectives for OPG workers and their contractors. CNSC staff note that this program will be used for all work completed by OPG or their contractors who are carrying out any of the licensed activities under a proposed construction licence. Contractors must meet OPG's human performance program requirements, in carrying out their assigned work activities.

2.2.2.2 Personnel Training

A systematic approach to training (SAT) approach is the framework endorsed by the CNSC for establishing and maintaining training requirements for workers at nuclear facilities. A SAT-based training system provides a systematic basis for the analysis, design, development, implementation, evaluation, documentation, and management of worker training. It provides a methodology to demonstrate that the workers have obtained and maintain required knowledge, skills, and safety-

related attributes through performance-based assessments, and that program evaluations are completed to ensure training programs reflect the operational state of the facility.

CNSC REGDOC-2.2.2 – *Personnel Training* establishes expectations for licensees regarding the development and implementation of a SAT-based training system. OPG has a comprehensive SAT program in place at the DNGS, that is subject to routine compliance verification against the expectations of REGDOC-2.2.2. OPG's performance in this area has been satisfactory as described in the annual Regulatory Oversight Reports for Nuclear Power Generating Stations.

CNSC staff have reviewed OPG's application and supporting documents with respect to the personnel training program. OPG's application refers to an established SAT-based training program described in OPG documents N-PROG-TR-005 – *Training* [R2.2-4] and N-PROC-TR-0008 – *Systematic Approach to Training* [R2.2-5], as well as in their associated processes, procedures, and job aids.

OPG program N-PROG-TR-0005 describes the training program for staff, contractors, temporary personnel, and other workers. OPG procedure N-PROC-TR-0008 provides the process to guide the development of performance-based training to support job performance requirements. Both the program and procedure documents are applicable to training programs identified in N-LIST-08920-10001 – *Nuclear Training Programs* [R2.2-6].

OPG indicated that these program and procedure documents, including the existing Nuclear Training Programs, will be applied to work during the construction phase of the project to ensure that workers are trained and qualified to carry out the proposed licensed activities. OPG also indicated that N-PROC-TR-0008 was intended to be used to develop and deliver DNNP-specific training and qualification for workers who are expected to carry out work under the proposed licensed activities.

2.2.2.3 Personnel Certification

Personnel certification relates to the qualification of certain workers that are employed in positions of immediate relevance to nuclear safety. At nuclear power reactor facilities, these positions typically include reactor operators, shift supervisors, as well as personnel employed in the senior health physicist role. CNSC requires comprehensive evidence demonstrating these workers are competent before CNSC designated officers, acting on behalf of the Commission, can issue a certification for qualification. CNSC staff make certification recommendations to the designated officer on its assessment of worker competency, based on the health of related programs covering several specific areas, including the Personnel Certification specific area.

CNSC staff reviewed OPG's application and available documentation related to OPG's personnel training, proposed full-scope simulator, and fitness-for-duty programs. OPG understands the necessity for planning and development of the programs to be implemented in support of CNSC certification, in particular the certification examination and requalification testing programs, and is working towards implementing these programs.

Recognising the necessity for OPG to implement adequate training and examination programs, and for operations personnel to be fully trained and qualified by OPG and certified by CNSC prior to fuel-in commissioning, CNSC staff encourages OPG to continue to engage in early planning and development to enable regulatory efficiencies. OPG is required to submit, during the construction phase, supplemental information for CNSC staff to determine which positions should ultimately be designated, and which methodologies would be employed by examiners to verify adequate worker competencies.

2.2.2.4 Work Organization and Job Design

CNSC staff reviewed OPG's application and supporting documentation with respect to job design and organisation of the work. OPG's application states that a "Resource Management Plan" and associated processes will be in place, to ensure that the Integrated Project Delivery (IPD) contractor companies maintain a sufficient number of qualified workers to perform the work safely. Section 5 of OPG document NK054-PLAN-01210-00108 – *Darlington Small Modular Reactor – Project Execution Plan (PEP)* [R2.1-10] shows the organisational structure for the composition of the project management team.

The various project teams in this structure are responsible for ensuring adequate resources for each phase of the project. The resource management plan; however, will not be finalised until the design of the BWRX-300 is finalised.

CNSC staff note, OPG has indicated that once the design of the BWRX-300 is complete and the schedules have been developed, the resource management plan will be finalised.

Should the Commission issue a licence to construct, CNSC staff will conduct compliance oversight activities throughout the construction phase to verify that both OPG and its contractors maintain sufficient numbers of qualified staff to carry out the proposed licensed activities.

2.2.2.5 Fitness for Duty

OPG is responsible for managing the health and safety of all workers on the DNNP site during the construction phase, as per OPG's requirements set out in its OPG-POL-0001 – *Employee Health and Safety Policy* [R2.7-5].

CNSC regulatory documents REGDOC-2.2.4 – *Fitness for Duty, Volume 1: Managing Worker Fatigue* and REGDOC-2.2.4 – *Fitness for Duty, Volume II: Managing Alcohol and Drug Use* are applicable to the operations phase of high-

security sites, as per the *Nuclear Security Regulations*. OPG has not requested authorisation for the use of nuclear materials on-site during construction of the BWRX-300, and therefore these REGDOCs will not apply during construction. OPG will use these regulatory documents during development of its BWRX-300 fitness for duty program, in advance of the licence to operate phase, should this project proceed.

OPG's contractors are expected to manage their employees' fitness for duty, including managing fatigue, and OPG requires all contractors to follow all applicable provincial employment and health and safety legislation. OPG's workers' supervisory organisations are required to have a fatigue management policy that meets the expectations outlined in section 3, *Programmatic Elements Applicable to the Broad Population*, of REGDOC-2.2.4 Volume 1.

Contract workers will be required to adhere to the workplace health and safety standards set by their organisations, including for management of fatigue and alcohol and drug use, as per the *Master Service Agreements* between OPG and its contractors, as required by OPG-POL-0001.

OPG has demonstrated that its contractor partners will be required to follow applicable employment and health and safety laws, and that these requirements will be described in the *Master Service Agreements*. OPG will be required to oversee the contractors' compliance with these agreements and with applicable legislation. CNSC staff will conduct compliance verification throughout the construction phase to verify that OPG and its contractors are adhering to all applicable laws and regulatory requirements.

2.2.3 Key References for this SCA

[R2.2-1] CNSC Regulatory Document, REGDOC-2.2.2 – *Personnel Training*, version 2, published December 2016.

[R2.2-1] CNSC Regulatory Document, REGDOC-2.2.4 – *Fitness for Duty, Volume 1: Managing Worker Fatigue*, version 1, published March 2017.

[R2.2-2] CNSC Regulatory Document, REGDOC-2.2.4 – *Fitness for Duty, Volume 2: Managing Alcohol and Drug Use*, version 3, published May 2022.

[R2.2-3] OPG Program document, N-PROG-AS-0002 – *Human Performance Program*, revision 18.

[R2.2-4] OPG Program document, N-PROG-TR-0005 – *Training*, revision 19.

[R2.2-5] OPG Program document, N-PROC-TR-0008 – *Systematic Approach to Training*, revision 24.

[R2.2-6] OPG document, N-LIST-08920-10001 – *Nuclear Training Programs*, revision 11, dated February 2022.

2.3 Operating Performance

The Operating Performance SCA requires licensees to implement and maintain an operations program for the conduct of licensed activities and includes an overall review of the conduct of the licensed activities, and the activities that enable effective performance. The specific areas that comprise this SCA at the DNNP include:

- Conduct of Licensed Activity
- Reporting and Trending
- Safe Operating Envelope

In addition, the Operating Performance SCA also includes the following specific areas, as described by REGDOC-1.1.2:

- Maintenance
- Chemistry Control

2.3.1 Regulatory Requirements and CNSC Staff Conclusions

The regulatory foundation for the recommendation(s) associated with the Operating Performance SCA includes the following:

- The *Nuclear Safety and Control Act*, subsection 24(4)
- The *General Nuclear Safety and Control Regulations*, sections 29-32, paragraphs 3(1)(b), 3(1)(c), and 12(1)(e)
- The *Class I Nuclear Facilities Regulations*, paragraph 5(c).

CNSC staff conclude that OPG has met the regulatory requirements.

The regulatory expectations for the recommendation(s) associated with the Operating Performance SCA includes the following:

- REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility (version 2)*, subsections 3.2, 4.3;
- REGDOC-2.3.1 – *Conduct of Licensed Activities: Construction and Commissioning* (version 1) [R2.3-1];
- REGDOC-2.3.2 – *Accident Management (version 2)*; and
- REGDOC-3.1.1 – *Reporting Requirements for Nuclear Power Plants (version 2)* [R2.3-2].

The Operating Performance SCA is applicable to the licence to construct stage as descriptions of programs and their proposed measures, policies, methods and procedures for constructing and commissioning are expected of the nuclear facility.

CNSC staff have reviewed OPG's application and supporting documentation for operating performance focusing on the establishment and implementation of OPG's construction and commissioning programs, and on the establishment of a Safe Operating Envelope program for the BWRX-300 reactor.

CNSC staff determined that OPG has in place the necessary procedures to meet the expectations in REGDOC-1.1.2 and REGDOC-2.3.1. OPG has adequate provisions in place to continue to meet the reporting requirements of REGDOC-3.1.1. During construction, OPG will be required to provide an update on the conduct of its activities on a routine basis.

OPG has in place adequate tools and procedures to establish the Safe Operating Envelope for the BWRX-300 reactor, in accordance with Canadian regulatory requirements. CNSC staff will continue to monitor the development of the SOE program as the BWRX-300 design progresses.

CNSC staff conclude that OPG has met the regulatory requirements and has put in place adequate provisions to meet the expectations, applicable to the Operating Performance SCA at the licence to construct stage. CNSC staff have identified areas where OPG will be required to provide further information for CNSC staff to verify compliance with the regulatory requirements. OPG has committed to provide this information for CNSC staff review as it becomes available. These commitments are identified under the "Operating Performance" SCA in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*, and are related to RHP-1: Installation of the Reactor Building foundation.

Three standardised licence conditions are included in the proposed licence. They are summarised as follows:

- Licence condition 3.1 will require that the licensee implements and maintains an operations program.
- Licence condition 3.2 will require that the licensee implements and maintains a reporting program and provide any event report in accordance with the criteria set out in REGDOC-3.1.1 – *Reporting Requirements for Nuclear Power Plants*.
- Licence condition 3.3 will require that the licensee maintain a construction and commissioning program.

Compliance verification criteria for these licence conditions are included in the draft *Licence Conditions Handbook*.

2.3.2 Discussion

Subsection 4.3, *Operating Performance*, of CNSC Regulatory Document REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility (version 2)* [R1-6] outlines expectations that an application for a licence

to construct describe the programs and proposed measures, policies, methods, and procedures for the construction and commissioning of the nuclear facility.

REGDOC-1.1.2 also outlines expectations for the application characterising the risks to health, safety, and the environment that may be encountered by workers and the public, including identifying the strategy the applicant will take should they be presented with additional risks to health and safety not anticipated during the licence application process.

2.3.2.1 Conduct of Licensed Activity: Construction and Commissioning Programs

CNSC Regulatory Document REGDOC-2.3.1 – *Conduct of Licensed Activities: Construction and Commissioning Programs* [R2.3-1] outlines the expectations for the conduct of construction and commissioning activities. The REGDOC is divided into two parts, with Part A providing requirements and guidance for construction activities of the reactor facilities and Part B providing requirements and guidance for commissioning of the reactor facilities.

Part A of REGDOC-2.3.1 focus on the readiness review of contractors to ensure all required permits have been obtained, contractors have in place construction management systems, have adequately planned the scope of their activities, have implemented the required training for staff and procedures governing their work, as well as ensuring hazards are adequately evaluated and controlled. These sections also require that the licensee's planning and scheduling activities include appropriate provisions for 'hold' and 'witness' points for various organisations, including the CNSC. There are also requirements regarding the procurement of long-lead items, manufacturing and assembly, turnover between parties during construction, and for maintaining configuration control.

OPG has implemented NK054-PLAN-01210-00107 – *Darlington New Nuclear Project Construction Plan* [R2.1-13] to demonstrate it meets the expectations outlined in Part A of the REGDOC.

This document describes the management and organisation, the contracting, and project delivery models that OPG has selected for the DNNP. OPG has stated its intent to use the Integrated Project Delivery Model (IPD) for all construction activities under a potential licence to construct (see subsection 2.1.2.2 – *Organisation*).

OPG is the owner of the project and has the overall accountability for the proposed licensed activities. OPG will have primary responsibility to ensure the safety and security of construction, including work carried out on its behalf by its contract partners. OPG has required its contract partners to document the implementation of their individual management systems in the respective contract agreements. These management systems must comply with current applicable CSA standards and industry codes, a requirement specified in the contract agreement.

OPG has stated that GE Hitachi will be the contracted organisation as the Design Authority, with responsibility for the design of structures related to the BWRX-300 powerblock (see subsection 2.1.2.1 – *Management System*).

OPG has stated that constructors involved in nuclear construction are experienced construction firms with established nuclear construction quality programs, an established history in nuclear construction projects, and a healthy safety culture.

All contracting partners are required to meet health and safety standards set by OPG and comply with applicable regulatory requirements. Additionally, each contractor partner is required to submit project-specific safety plans that detail the management and control of specific hazards. CNSC staff have reviewed OPG's Health and Safety plans, with an analysis provided in subsections 2.6 – *Radiation Protection* and 2.7 – *Conventional Health and Safety*.

OPG's *Project Construction Plan* requires that all contract partners use the Comprehensive Work Package process as the primary means to ensure adequate preparation and readiness for construction. A Comprehensive Work Package includes elements of safety planning and controls, instructions for specific work tasks, a Construction and Inspection Test Plan, bills of materials, reference drawings, as well as other elements necessary to carry out the proposed work. Once a Comprehensive Work Package is drafted, it will be reviewed and approved by the organisation's Engineering department, OPG's representatives, as well as other resources such as OPG Quality Assurance, representatives of the designated Authorised Inspection Agency (AIA), and others as required prior to construction. Any required witness or verification points are identified and added to the Comprehensive Work Package during this quality review process.

To ensure proper project management, OPG has defined the scope of construction activities into three (3) bundles, as follows:

- Nuclear Island – those structures and systems comprising the BWRX-300 powerblock, including the Reactor Building, the Radwaste Building, the Control Building, as well as all Nuclear Fuel Handling and storage systems with the exception of dry fuel storage.
- Conventional Island – those structures and systems not directly related to the production of nuclear energy, such as the Turbine Building, the Power Conversion systems, and Nuclear Island support systems.
- Balance of Plant (BOP) – those structures and systems supporting the Nuclear or Conventional systems, including the Condenser Cooling Water (CCW) system and its tunnels, the Forebay, Pumphouse, Security Building, Yard systems (e.g., storage tanks, outbuildings, etc.), the Switchyard, and other plant SSCs.

OPG has adequately described these three bundles in the construction procedure and will provide a more detailed construction schedule for CNSC staff review.

Procurement of Long-Lead Items

Subsection 5.2, *Long-Lead Items*, of REGDOC-2.3.1 provides guidance on the management and procurement of items that may have long lead times. The procurement of such items is a business risk entirely at the licensee's discretion. Items that are subject to regulatory approval or acceptance, that are procured prior to CNSC regulatory approval, will require reconciliation between the original purchasing specification, the design basis for the licence to construct, and the as-built configuration. Should CNSC staff determine the long lead item does not meet regulatory requirements, OPG will be required to provide an alternative that meets regulatory requirements. OPG committed to provide the documentation for procurement of long-lead items and their specifications for SSCs important to safety, and other information related to long-lead items, per the expectations outlined in REGDOC-2.3.1.

OPG will require equipment and materials as part of planning for construction that may have long-lead manufacturing or fabrication times. OPG has defined "long-lead items" as any component that requires more than twelve (12) months time between order placement to delivery or being ready to ship to the site. Some examples of these long-lead items include:

- The Reactor Pressure Vessel (RPV), including the reactor head and associated internals.
- The Main Output Transformer (MOT) and Unit Auxiliary Transformer (UAT).
- The Steam Turbine and Generator package.
- The Main Steam Isolation Valves.
- Plant Control Systems and related software.

In addition, certain construction equipment and tooling are classified as long-lead items, as follows:

- Heavy mobile cranes for lifting and setting the RPV.
- Manufacturing of steel-plate concrete composite structures, including the related manufacturing equipment and associated tooling.
- The Tunnel Boring Machine (TBM) for the CCW System tunnel excavation.

For the manufacturing of these plant systems and components, OPG has indicated that there will be specific hold and witness points built-into the manufacturing schedules for quality assurance, and to allow for inspection or audit by regulatory authorities such as CNSC or AIA. CNSC maintains the right to inspect finished products and work in-progress at a manufacturer's facility.

OPG will also provide oversight of factory testing of components, as well as witness certain critical manufacturing steps to ensure compliance with

procurement specifications and technical requirements. OPG has committed to provide schedules for the manufacturing of long-lead items to CNSC staff for review.

OPG will also assemble or manufacture some material, sub-assemblies, modules, or other plant assemblies either on-site or in the local region using specialty contracted services. Some examples of these assemblies include the manufacturing and assembly of steel-plate concrete composites (SC) and pipe spools.

As components that are important to safety are received on site, they will be required to be stored and maintained (i.e., following a preventative maintenance schedule), in accordance with the manufacturer's requirements.

Throughout the construction phase, OPG will be required to implement housekeeping and foreign material exclusion (FME) processes to protect these components as well as plant systems. The FME processes implemented should consider receipt and storage on-site at a phase in the construction schedule that would minimise exposure to environmental hazards such as dust, dirt, chemicals, extreme temperatures, and other related hazards. OPG has committed to implementing FME processes and where required, place FME controls on these components and systems to prevent intrusion of foreign materials that could adversely affect the performance of the system or component.

Commissioning Program

Part B of REDOC-2.3.1 focuses on the expectations for the commissioning program including specifying expectations for commissioning tests, identifying testing phases and regulatory hold points, the transfer of structures, systems, and components and the reactor facility.

OPG has implemented NK054-PLAN-01210-00100 – *Darlington New Nuclear Project Turnover and Commissioning Program Management Plan* [R2.3-3], to demonstrate it meets the expectations in Part B of the REGDOC. CNSC staff note that this document describes the four (4) phases, as well as their associated hold points, in accordance with regulatory requirements. Staff note that this document also describes a process for the turnover of SSCs from construction to commissioning, through use of the "construction completion declaration" process and its associated performance indicators.

CNSC staff's review confirmed that OPG's process provides an overview of the processes to move from construction to commissioning phases; however, the process documents that detail the turnover from construction to commissioning phases have not yet been developed, given the current status of the BWRX-300 design and construction schedule. These details will be developed and submitted for CNSC staff review should this project proceed to the licence to operate phase.

CNSC staff concluded that OPG has the necessary program and procedures in place to meet the regulatory expectations from Parts A and B of REGDOC-2.3.1.

2.3.2.2 Reporting and Trending

CNSC regulatory document REGDOC-3.1.1 – *Reporting Requirements for Nuclear Power Plants (version 2)* [R2.3-2] provides the regulatory framework for licensees to provide scheduled and unscheduled reports to the CNSC.

As outlined in its LCH, OPG is required to comply with REGDOC-3.1.1 as part of its site preparation licence; however, based on a risk-informed graded approach, OPG is required to submit certain scheduled reports and report any events meeting the criteria of Appendix A that occur on the DNNP site.

During the current site preparation licensing period, OPG has submitted both scheduled and, as events occur, reports in compliance with REGDOC-3.1.1. Table 2-2 below provides an overview of events reported by OPG during the current licensing period.

Table 2-2: Reportable Events at OPG DNNP during the Site Preparation licensing period

Year	2020	2021	2022	2023
Events reported	0	1	0	0

One spill has occurred during the licence period. In 2021, OPG reported that there was a spill of mineral oil from a decommissioned electrical transformer not associated with licensed activities but being temporarily stored on the DNNP site. The amount of mineral oil spilled exceeded the exemption limit of 100 litres set by Ontario regulations, and required a report submitted to the Ontario Ministry of Environment, Conservation, and Parks (MECP). There have been no other unscheduled event reports for the DNNP site.

For this event, CNSC staff concluded that OPG followed-up with appropriate corrective actions and cause analysis assessments.

For all scheduled reporting applicable to the current licensing period, OPG sent satisfactory reports to CNSC staff within the frequency required by REGDOC-3.1.1.

Should the Commission issue a construction licence, OPG will be required to comply with additional reporting requirements in the REGDOC throughout the construction phase. As construction proceeds, OPG will be required to comply with the following requirements to submit additional scheduled reports outlined in section 4 of REGDOC-3.1.1:

- Subsection 4.2, *Probabilistic Safety Assessment*, for updates and modifications to the probabilistic safety assessment models and analyses.
- Subsection 4.3, *Site Environmental Risk Assessment*, for updates to the DNNP-specific environmental risk assessment (ERA), including any changes to the Human Health or Ecological Risk Assessments and consequential changes to the DNNP Environmental Monitoring and Environmental Assessment Follow-up (EMEAF) plan. Subsection 2.8.2.1 – *Environmental Risk Assessment* provides additional discussion on the DNNP ERA.

OPG currently provides CNSC staff with regular updates describing changes to facility descriptions as well as corresponding updates to the facility safety analysis. CNSC staff expect this regular reporting will continue throughout the construction phase of the project, should the Commission issue a construction licence.

CNSC staff conclude that OPG has adequate provisions to continue to meet the regulatory requirements in REGDOC-3.1.1.

2.3.2.3 Safe Operating Envelope

Paragraph 5(e) of the *Class I Nuclear Facilities Regulations* requires that an application for a licence to construct contain a description of the systems and equipment proposed to be installed at the nuclear facility, including their design, and their design operating conditions. The CSA N290.15 – *Requirements for the Safe Operating Envelope of Nuclear Power Plants* standard [R2.3-4] defines the Safe Operating Envelope (SOE) as:

"*[T]he set of limits and conditions within which the nuclear power plant must be operated to ensure compliance with the deterministic safety analysis of design basis accidents upon which nuclear power plant operation is licensed and which can be monitored by or on behalf of the operator, and controlled by the operator or on behalf of the operator when authorized by the operator."*

CNSC staff acknowledge that complete details of the applicant's SOE program will be available following completion of the final plant design details, as well as the completion and implementation of the plant's final safety analysis. The establishment of a complete SOE program, including Operational Limits and Conditions (OLC) are required with the submission of a Licence to Operate, as specified by paragraphs 6(a) and (d) of the *Class I Nuclear Facilities Regulations*.

OPG's PSAR, documented in OPG report NK054-SR-01210-00001 – *Darlington New Nuclear Project – BWRX-300 Preliminary Safety Analysis Report* (PSAR) [R2.4-1], described its approach to meet both the SOE and Operating Limits and Conditions (OLC) requirements as described in clause 4.3.3 of REGDOC-2.5.2 – *Design of Reactor Facilities* and elaborated in CSA N290.15.

In the PSAR, OPG indicated that the OLC and the SOE implementation will follow the practices and requirements used in Boiling Water Reactors (BWR) licensed by the United States Nuclear Regulatory Commission (USNRC), detailed in the NUREG-1434, Volume 1, "*Standard Technical Specifications – General Electric BWR/6 Plants: Specifications*" [R2.3-5] publication. OPG also indicated that the OLC for the BWRX-300 design meets the requirements outlined in REGDOC-2.5.2, REGDOC-1.1.2, and CSA N290.15.

CNSC staff noted that the "*Standard Technical Specifications*" have been used and implemented by the USNRC and its licensees to verify and ensure the safe operation of BWRs. Staff also noted that the scope of the "*Standard Technical Specifications*" covers, and for certain aspects may exceed, the expectations of the applicable CSA N290.15 standard.

CNSC staff's review of Chapter 16 of the PSAR, and a review of the provided clause-by-clause assessment [R2.3-6], concluded that OPG has in place the tools and processes to establish and document the SOE in accordance with the CSA N290.15 standard as the safety analysis report is completed.

CNSC staff will continue its regulatory oversight of the implementation of the SOE program and development of SOE parameters for the BWRX-300 reactor throughout the lifecycle of the project and prior to the licence to operate phase should this project proceed. As the plant design and safety analysis evolves, CNSC staff will verify that the established SOE limits and conditions of the specific features of the BWRX-300 reactor, including the novel safety features will meet applicable regulatory requirements and expectations.

2.3.2.4 Maintenance

Subsection 4.3.2, *Operating Performance: Procedures*, of REGDOC-1.1.2, states that an application for a licence to construct should contain a description of the maintenance and inspection programs implemented to prevent deterioration of SSCs important to safety once installed, constructed, or commissioned. The application should also describe the relevant organisation, with defined organisational responsibilities, required to implement the program.

Subsection 4.3 of OPG's application states that the control measures established to protect SSCs important to safety will include:

- Establishment of environmental conditions limits for SSCs.
- Implementation of foreign material exclusion measures.
- Establishment of protection requirements for installed components.
- Implementation of system and component cleaning methods prior to their installation.
- Establishment of chemistry control requirements for layup and cleaning of piping systems and components.

Subsection 14.2.4.4 of the PSAR also describes these control measures, stating that during construction and commissioning and prior to fuel loading, maintenance, surveillance, and in-service testing of SSCs will be managed by the design authority with OPG providing oversight and concurrence. CNSC staff's review of OPG's application concluded that this approach is acceptable. OPG will provide additional information as the project proceeds with the installation of SSCs.

CNSC staff have determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. OPG has committed to implementing required maintenance activities and protection measures during the construction phase. As the construction schedule evolves OPG has committed to provide additional information as outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*. CNSC staff will conduct compliance verification activities throughout the construction phase to verify that maintenance and inspection activities are carried out on SSCs installed, constructed, or commissioned.

2.3.2.5 Chemistry Control Program

Subsection 4.3.2, *Procedures: Commissioning Program*, of REGDOC-1.1.2 states that an application for a licence to construct should describe the chemistry control of SSCs during construction and commissioning, in accordance with the requirements of subsection 5.5, *Protection of System, Structures, and Components Important to Safety*, of REGDOC-2.3.1.

CNSC staff note that OPG has not yet developed the chemistry control program for the BWRX-300. However, the PSAR provides an overview of the planned objectives for the DNNP chemistry control program. CNSC staff reviewed these objectives and determined they were adequate and consistent with those of an appropriate chemistry control program. In addition, the references OPG provided that will be used to develop the program and determine the parameters and value limits of these parameters, are acceptable.

CNSC staff note that the implementation and documentation of the BWRX-300 chemistry control program will be required prior to the licence to operate phase.

2.3.3 Key References for this SCA

[R2.3-1] CNSC Regulatory Document, REGDOC-2.3.1 – *Conduct of Licensed Activities: Construction and Commissioning Programs*, version 1, published January 2016.

[R2.3-2] CNSC Regulatory Document, REGDOC-3.1.1 – *Reporting Requirements for Nuclear Power Plants*, version 2, published April 2016.

[R2.3-3] OPG document, NK054-PLAN-01210-00100 – *Darlington New Nuclear Project Turnover and Commissioning Program Management Plan*, Sheet 19, revision 1, dated March 2023.

[R2.3-4] CSA Standard, N290.15 – *Requirements for the Safe Operating Envelope of Nuclear Power Plants*, 2019 edition.

[R2.3-5] United States Nuclear Regulatory Commission document, *NUREG-1434 – Standard Technical Specifications – General Electric BWR/6 Plants: Specifications*, revision 5, published in September 2021.

[R2.3-6] OPG letter to CNSC, *DNNP – Responses to CNSC Staff Technical Comments #3 on the OPG Application for the Licence to Construct a Reactor Facility*, OPG CD# NK054-CORR-00531-10837, dated 30 August 2023.

2.4 Safety Analysis

The safety analysis SCA covers the maintenance of the safety analysis that supports the overall safety case for the facility. Safety analysis is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or facility and considers the effectiveness of preventative measures and strategies in reducing the effects of such hazards. The specific areas that comprise this SCA at the DNNP include:

- Hazard Analysis
- Probabilistic Safety Analysis
- Deterministic Safety Analysis
- Criticality Safety
- Severe Accident Analysis
- Event Mitigation

2.4.1 Regulatory Requirements and CNSC Staff Conclusions

The regulatory requirements forming the foundation for CNSC staff's recommendation, associated with the Safety Analysis SCA include the following:

- The *Nuclear Safety and Control Act*, subsection 24(4).
- The *General Nuclear Safety and Control Regulations*, paragraph 3(1)(i).
- The *Class I Nuclear Facilities Regulations*, paragraph 5(f).

The regulatory expectations forming the foundation for CNSC staff's recommendation, associated with the Safety Analysis SCA include the following:

- REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility (version 2)*, subsection 4.4.
- REGDOC-2.4.1 – *Deterministic Safety Analysis (version 1)*;
- REGDOC-2.4.2 – *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants (version 2)*; and
- REGDOC-2.4.3 – *Nuclear Criticality Safety (version 1.1)*.

CNSC staff's review of OPG's application and supporting documentation, found that OPG has met the regulatory requirements; however, there are a number of areas where OPG is required to provide additional details to demonstrate compliance with regulatory expectations as the BWRX-300 safety analysis progresses. OPG has committed to provide this information for CNSC staff review as it becomes available. These commitments are identified under the "Safety Analysis" SCA in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*. These commitments are related to RHP-1: Installation of the Reactor Building foundation.

In conclusion, CNSC staff have determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct with conditions. CNSC staff will complete reviews of the safety analysis information as it is provided to ensure compliance with regulatory requirements.

One standardised licence condition is included in the proposed licence. It is summarised as follows:

- Licence condition 4.1 will require that the licensee implements and maintains a safety analysis program that is inclusive of all elements of the safety analysis of the BWRX-300 reactor presented in this subsection.

Compliance verification criteria for these licence conditions are included in the draft *Licence Conditions Handbook*.

2.4.2 Discussion

Paragraph 5(f) of the *Class I Nuclear Facilities Regulations* requires that an application for a licence to construct contain a "preliminary safety analysis report demonstrating the adequacy of the design of the nuclear facility." Subsection 4.4, *Safety Analysis*, of REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility* [R1-6] expands on this requirement.

The Preliminary Safety Analysis Report (PSAR) is expected to include a deterministic safety analysis (DSA), a probabilistic safety assessment (PSA), and a hazards analysis commensurate with the level of design. The application should demonstrate that all levels of defence in depth are addressed and should confirm that the design is capable of meeting the applicable dose acceptance criteria and safety goals.

OPG submitted NK054-SR-01210-10000 – *Darlington New Nuclear Project – BWRX-300 Preliminary Safety Analysis Report* [R2.4-1] (PSAR) with its application for a licence to construct.

2.4.2.1 Hazard Analysis

The application is expected to describe the analysis of all potential natural and anthropogenic internal and external hazards, including (but not limited to) earthquakes, floods, high winds, airplane crashes, internal floods, turbine missiles, and releases of hazardous substances.

CNSC staff provide more information related to the hazard analysis performed for the BWRX-300 in the dedicated subsection A.1.1 – *Hazard Analysis*.

2.4.2.1.1 Hazard Screening, Assessment and Methodology

The purpose of screening hazards in a separate analysis is to determine which hazards can be screened-out from the probabilistic safety assessment (PSA), and to identify which hazards require assessment in the PSA. As discussed in subsection 2.4.2.2 – *Probabilistic Safety Analysis*, hazards from the reactor,

support systems, and non-reactor sources (e.g., the spent fuel pool), are considered in the hazard screening analysis. The hazard screening analysis also considers combinations of hazards, such as two or more internal or external hazards, or external hazards combined with internal hazards, etc.

CNSC staff note that OPG's methodology is based on internationally accepted and developed guidelines, and a similar methodology for screening hazards for probabilistic safety assessments has been accepted by CNSC staff for OPG's existing nuclear reactors.

2.4.2.1.2 Hazard Analysis Results

CNSC staff provide more information related to the results of the hazards analysis, and specifically for the following analysed hazards, for the BWRX-300 in subsection A.1.1.2 – *Hazard Analysis Results*.

The following paragraphs describe how OPG has provided information to support CNSC staff's recommendation for the Commission to issue a licence to construct. OPG will be required to provide additional information related to these hazards analysis results, to ensure that regulatory expectations have been met, as described in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction.* These commitments are related to RHP-1: Installation of the Reactor Building foundation.

Probabilistic Safety Analysis Screening

CNSC staff found the results of the screening analysis to be adequate and in line with CNSC expectations. OPG stated that the hazard analysis screening process, and the associated PSAs, will continue to evolve as the BWRX-300 design progresses and procedures continue to be developed. Any consequential changes to the safety analyses will be provided to CNSC staff on a routine basis for review and compiled into the facility's Safety Analysis Report.

Fire Hazard Assessment

CNSC staff review of OPG's documentation noted that the scope of the FHA included a listing and description of expectations of the applicable codes and standards. The FHA also provides documented fire protection acceptance criteria.

CNSC staff's review of the fire protection system documentation is found in subsection 2.5.2.5.12 – *Fire Safety and Fire Protection Systems*.

Seismic Hazard Assessment

CNSC staff sought the expertise of the Canadian Hazards Information Service (CHIS), within Natural Resources Canada, as the expert body that carries out seismic hazard reviews. CNSC staff, as well as CHIS review, determined that OPG's seismic hazard assessment is of good quality and was conducted using

acceptable engineering judgment. However, several areas where further information is needed were identified, including that OPG address the epistemic uncertainty and sensitivity of the seismic hazard to each of the source models in the assessment. CNSC staff will review the updated report to finalise its conclusions on the seismic hazard at the DNNP site.

Wind Hazard Assessment

CNSC staff worked with subject matter experts from Environment and Climate Change Canada (ECCC) in its review of the high winds assessment.

CNSC and ECCC staff determined that, in general, OPG's wind hazard assessment is of good quality and did not identify any major areas of concern. However, several areas requiring further information were identified, and OPG was requested to provide more information for CNSC staff to confirm the conclusions of the assessment.

CNSC staff determined the level of information regarding wind hazards was sufficient for a licence to construct. OPG is expected to provide a revised high winds hazard assessment report, where CNSC staff will review the updated report to finalise its conclusions on wind hazards at the DNNP site.

Meteorological Hazards

CNSC staff reviewed the external meteorological hazards analysis and conclude that the screening analysis has met regulatory expectations.

Flooding Hazards

CNSC staff reviewed OPG's flood hazard assessment submissions and concluded it met regulatory expectations. CNSC staff determined that no safety concerns due to the predicted flood hazard are expected, if design requirements and mitigation measures outlined in the flood hazard assessment are implemented. CNSC staff also identified areas in the flood hazard assessment that require additional information and expect OPG to revise the flood hazard assessment as the design of the facility progresses.

Consideration of Climate Change Impacts

CNSC staff reviewed the 2022 *BWRX-300 Flood Hazard Assessment*, OPG's strategy and assessment reports for consideration of climate change impacts, as well as other supporting documentation and concluded that OPG's assessment of climate change impacts is acceptable. OPG's assessment is in accordance with regulatory requirements and expectations, and is sufficient to ensure that the BWRX-300 facility is resilient to climate change as an external hazard. CNSC staff concur with OPG's determination that climate change presents a low predicted impact on SSCs, provided the risk treatment methodologies on the 11

potentially vulnerable SSCs proposed by OPG in its Phase 2 report are implemented.

CNSC staff note OPG's Phase 2 report is preliminary and requires review and acceptance by CNSC staff to confirm the conclusions made in the reports. OPG is expected to update this information in subsequent analyses and revisions to climate change predictions.

Geological and Geotechnical Hazards

CNSC staff note the frost penetration depth at the site is approximately 1.3 metres below the ground surface, well above the foundation of the BWRX-300 reactor building and above where site services are to be installed. Structures within the BWRX-300 powerblock will be constructed with levelled and finished plant grade and are over 100 metres away from the shoreline. Shoreline protection measures, however, will be required and will prevent the erosion of the shoreline bluffs, and consequently the steep shoreline bluffs do not present a hazard to DNNP SSCs. Slopes to be excavated or cut for the DNNP are expected to be designed to meet current applicable engineering guidelines for stability, to ensure that there are no safety concerns.

Through a review of the liquefaction hazard study [R2.4-19], CNSC staff noted that the study assumes there is negligible soil disturbance from construction activities. Available borehole data surrounding each proposed structure represents the post-construction conditions except for over-excavation and backfill areas. Should sufficient disturbance in soils surrounding the Reactor Building occur, current borehole data may not be representative of the post-construction conditions and the liquefaction assessments of powerblock structures may require re-assessment. OPG is expected to provide the results of ground movement and groundwater monitoring studies to demonstrate there has been no, or negligible, disturbance to the soils surrounding the reactor building excavation.

CNSC staff have requested OPG confirm ground support for deep excavation of the Reactor Building be designed and constructed to minimise the disturbance to surrounding soil during excavation. OPG indicated that a shoring wall will be installed prior to deep excavation, which will be established through the soil and emplaced into the bedrock. This will allow for excavation of a vertical shaft slightly larger than the proposed Reactor Building superstructure, intended to minimise any disturbances to surround soils.

2.4.2.2 Probabilistic Safety Analysis

The PSA, together with the other elements of a safety analysis (i.e., a Deterministic Safety Analysis, Hazard Analysis), are expected to provide a systematic analysis to give confidence that a reactor facility design will align with fundamental safety objectives established in the CNSC regulatory framework. The objectives of a PSA for the plant design phase include:

- Demonstration that a balanced design has been achieved, and that no particular feature or hazard group provides a disproportionately large or uncertain contribution to plant risk.
- Demonstration that quantitative safety goals are met.
- Provide site-specific assessments for probabilities of occurrence, and consequences of, external hazards that can be used for plant design and design improvement.
- To identify plant vulnerabilities, risk-important Structures, Systems, and Components (SSC), and operational procedures to support plant design.
- Provide confidence that small change of conditions that have potential to lead to a catastrophic increase in the severity of consequences (so-called "cliff-edge effects") are prevented.
- Provide support for other safety analysis elements throughout the plant design.
- Provide support for the development of other plant operational procedures, including emergency operating procedures, and a severe accident management program.

An application for a licence to construct also describe how the results of the PSA have been used to identify reactor vulnerabilities.

2.4.2.2.1 Description of Computer Codes and Methodologies Used in the Probabilistic Safety Assessment

OPG's submission included a request to use the latest versions of codes controlled by the Electric Power Research Institute (EPRI), including:

- Computer Aided Fault Tree Analysis System (CAFTA) (version 11)
- PRAQuant (version 11)
- System Importance (SYSIMP) (version 11)
- Fault Tree Reliability Evaluation Expert (FTREX) (version 1.8)
- Uncertainty Evaluation Tool (UNCERT) (version 11)
- FRANX (version 11)
- Advanced Cutset Upper Bound Estimator (ACUBE) (version 11)
- Human Reliability Analysis (HRA) Calculator (version 5).

CNSC staff accepted the use of these versions of the EPRI codes for use in the PSA for the DNNP.

2.4.2.2.2 Preliminary DNNP Probabilistic Safety Analysis Results

CNSC staff reviewed Chapter 15 of the PSAR, OPG document NK054-REP-01210-00163 – *BWRX-300 Probabilistic Safety Assessment Summary Report* [R2.4-24], and supporting documentation.

CNSC staff provided comments on the completeness of the PSA submissions provided by OPG, including that the PSA submission does not include uncertainty, sensitivity, and importance analyses. OPG indicated that the PSAs are iterative in nature and will evolve as the design progresses, and that the final design PSAs will include the uncertainty, sensitivity, and importance analyses.

CNSC staff have accepted OPG's response and will review additional submissions as they are available. CNSC staff also note that OPG is using modified importance measures for the identification of risk-significant Safety Class 2 and 3 SSCs. This is an approach that differs from current practice and is currently under review by CNSC staff as outlined in subsection 2.5.2.2.6.1 – *Safety Classification*. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* summarises the commitment for OPG to provide updated PSA submissions as the design progresses, including uncertainty, sensitivity, and importance analyses.

CNSC staff completed a review of the provided PSA submissions. OPG is required to provide additional information as the design progresses to clarify the technical adequacy of the PSA to support the design of the plant, including the reliability of passive systems and their modelling strategy.

CNSC staff noted that the design of the BWRX-300 relies on passive safety systems and functions to achieve specific safety functions, including overpressure protection for the reactor coolant system and containment, decay heat removal, and containment cooling. CNSC staff expects that the design of a safety system demonstrate it is able to meet defined reliability targets. In addition, the reliability of passive safety systems shall be modelled in the PSA. CNSC staff's review of the documentation provided by OPG noted that additional information is required as the design progresses to demonstrate reliability targets will be met.

OPG has committed to provide additional information related to PSA development, identification of parameters, and modelling of plant systems as the BWRX-300 design continues to progress. CNSC staff will continue to review the detailed information to ensure that the PSA is conducted in accordance with accepted methodologies and meets regulatory expectations. The commitment to provide further PSA information is also identified in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

Table A-1 in Appendix A summarises the preliminary results provided by OPG. From a review of the preliminary results CNSC staff conclude that:

- OPG has a process in place to perform and update PSA results, and that the current preliminary results indicate that the safety goals will be met. CNSC staff will continue to review and assess PSA results as the design progresses to verify that the PSA meets regulatory expectations.

- The Small Release Frequency (SRF) is not included in the summary of PSA results. OPG indicated that the severe accident analysis showed that accident sequences for the BWRX-300 reactor that meet SRF criteria also meet the criteria for a LRF, and the sequences are considered under the LRF criteria. OPG has not yet provided detailed information (e.g., a source term analysis), to support this argument. CNSC staff expect that the SRF should be calculated. OPG has committed to providing this information as the design progresses, and CNSC staff will review OPG's detailed source term analysis as the information becomes available.

- The overall seismic risk is the dominant contributor to overall plant risk, as it contributes the majority of the CDF and LRF risks.

CNSC staff note that these results are preliminary and are used to continue to progress the design of the BWRX-300. OPG has indicated that subsequent PSAs could result in variances in the calculated CDF or LRF risks, and that any potential variances will be further reflected in updated safety assessments as the design progresses. Variances in the calculated CDF or LRF risks will not alter OPG's commitment to meet the safety goals. CNSC staff will review any variances to verify it does not impact the licensing basis.

CNSC staff determined that the information OPG has provided for PSA is sufficient for a licence to construct. Safety analysis is an iterative process, and OPG has committed to provide further detailed PSA information as it becomes available. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* identifies these commitments. CNSC staff will continue to review this information to verify that the PSAs are conducted in accordance with the regulatory expectations.

2.4.2.3 Deterministic Safety Analysis

The objective of a DSA is to confirm that the design of a reactor facility meets design and safety requirements, to derive operational limits and conditions consistent with the design and safety requirements for the reactor and assist in demonstrating that safety goals are met.

The safety strategy framework for the BWRX-300 integrates defence lines (see subsection 2.5.2.2.5 – *Defence in Depth*) that protect the integrity of physical barriers against any potential radioactive releases. The Postulated Initiating Events (PIE) analysed and reviewed by CNSC staff were identified and selected using a systematic fault evaluation process, further described in this subsection.

2.4.2.3.1 General Overview of the Deterministic Safety Analysis

CNSC staff conducted a review of the deterministic safety analysis requirements for the overall safety analysis of the reactor, as described throughout this Chapter. The DSA is divided into two parts:

- Part One presents derived acceptance criteria (see subsection 2.4.2.3.2 – *Safety Objectives and Acceptance Criteria*), and describes an evaluation and analysis of the fault sequences to confirm the adequacy of fission product barriers against those derived acceptance criteria (see subsection 2.4.2.3.3 – *Identification, Categorisation, and Grouping of Postulated Initiating Events and Accident Scenarios*).

- Part Two describes an analysis of the event dose consequences resulting from a fission product release, or other source of release of radioactive materials (see subsections 2.4.2.3.5 – *Analysis of Normal Operation Conditions* through 2.4.2.3.8 – *Analysis of Design Extension Conditions*).

CNSC staff note that the TRACG code calculates the mass and energy release from modelled breaks of various sizes and locations inside the containment structure. These calculations are treated with a methodology involving a one-way coupling with conservatively calculated mass and energy release rates and supplied as input boundary conditions to the GOTHIC code calculation, until the point in the modelled behaviour when both the containment and Reactor Pressure Vessel (RPV) pressures maintain equilibrium. This proposed methodology does not require the continuation of the GOTHIC calculation beyond this equilibrium point, because the containment pressure in the long-term is bounded by the calculated RPV pressure.

CNSC staff have independently executed the code for the modelled scenarios based on the parameters identified in the safety analysis completed to-date, to verify the assumptions, inputs from the TRACG code, as well as the modelling methodology itself, to verify that the results are consistent with OPG's predictions documented in Chapter 15 of the PSAR.

CNSC staff note that the safety analyses are not yet reflective of the completed BWRX-300 design, and that they will continue to evolve as the design progresses. Safety analysis is an iterative process, and OPG has committed to provide further detailed safety analysis information as it becomes available. CNSC staff will continue to review this information to verify that the safety analyses are conducted in accordance with the regulatory expectations.

The following subsections provide an overview of key aspects of the DSA, as well as CNSC staff's conclusions resulting from a review of the provided documentation.

2.4.2.3.2 Safety Objectives and Acceptance Criteria

CNSC staff reviewed the dose results provided in subsection 15.7 of OPG's PSAR and concluded that OPG's analyses of the radiological consequences of the analysed events do not exceed the regulatory acceptance criteria, and met the derived acceptance criteria listed in Table A-2 for AOOs and Table A-3 for DBAs, respectively. CNSC staff conclude that the approach used to establish the derived acceptance criteria is consistent with regulatory expectations.

2.4.2.3.3 Identification, Categorisation, and Grouping of Postulated Initiating Events and Accident Scenarios

As the BWRX-300 design continues to progress, OPG has committed to providing CNSC staff with regular updates and analysis information for the fault list and corresponding DSA analyses. CNSC staff will review this information when provided to verify that the DSA continues to evolve with the design and that any changes to the fault list are made according to the safety analyses. This commitment is identified in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

CNSC staff review of the supporting documentation noted that OPG used qualitative frequencies as an interim measure through the early design stages to progress the DSA, prior to the availability of mature probabilistic safety analysis information. In addition to the event categorisation frequency, the categorised events are allocated to one of the following DSA types:

- Baseline AOO (BL-AOO), with a primary objective to demonstrate the effectiveness of Defence Line 2 functions,
- Conservative AOO (CN-AOO),
- Baseline DBA (BL-DBA),
- Conservative DBA (CN-DBA), or
- Extended DEC (EX-DEC).

CNSC staff review of the PIEs and accident scenarios identified in the table above complies with the regulatory expectations.

2.4.2.3.4 Description and Qualification of Computer Codes Used for Containment Analysis

CNSC staff's detailed review and assessment of the various computer codes used in the safety analysis of the BWRX-300 reactor are provided in subsection A.1.3.4 – *Description and Qualification of Computer Codes Used for Containment Analysis*.

2.4.2.3.4.1 Transient Reactor Analysis Code "GE Hitachi" (TRACG)

The Transient Reactor Analysis Code "GE Hitachi" (TRACG) computer code is a GE Hitachi proprietary version of the TRAC code. This code is designed to use advanced one-dimensional and three-dimensional methods to model phenomena important in evaluating the operation of BWRs.

CNSC staff have a memorandum of cooperation with the USNRC and have produced a review of the joint Licensing Topical Report on the applicability of the code to the BWRX-300 reactor.

CNSC staff note that the NEDE-32177 – *TRACG Qualification* document was issued in 2007—several years prior to the initiation of the BWRX-300 design. To address this potential gap in qualification, additional qualification documentation

for BWR designs such as the Simplified BWR (SBWR) and the Economic Simplified BWR (ESBWR) were provided.

CNSC staff conclude that the documents provided by OPG in support of TRACG qualification provide an overview of the qualification of the code for other BWR designs, but do not explicitly consider the BWRX-300 design. CNSC staff noted that the submitted information should be supported by comprehensive, recent, and design-representative experimental data focused on a qualification to the BWRX-300 specific design. Further, the submission should be based on the implementation of natural circulation as the primary driving force for normal operations, and on mitigating accidents with passive systems also using natural circulation.

OPG has committed to comply with Canadian code validation expectations for all codes used in the analysis and design of the BWRX-300. CNSC staff expect OPG to provide additional TRACG qualification documentation, specifically focused on the BWRX-300 design, that addresses the design differences between the BWRX-300 and previous designs as the design progresses. The commitment for OPG to provide additional TRACG qualification documentation is identified in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

2.4.2.3.4.2 Generation of Thermal-Hydraulic Information for Containment (GOTHIC)

GOTHIC is currently qualified in Canada as a Containment and Severe Accident Industry-Standard Toolset (IST) code. Various GOTHIC-IST versions are used by nuclear power plant operators to support deterministic safety analyses. In the BWRX-300 design, GOTHIC is used to evaluate the containment response to a mass and energy release from the Reactor Pressure Vessel (RPV). The performance of the BWRX-300 Passive Containment Cooling System (PCCS) (see subsection 2.5.2.5.5.4.2 – *The Passive Containment Cooling System (PCCS)*) is also included in the GOTHIC model.

CNSC staff conclude that the GOTHIC computer code model is appropriately applied to the BWRX-300 design. Should OPG change the version of the GOTHIC code used for the BWRX-300 analyses, OPG will be required to demonstrate the validation of the updated version to the design of the BWRX-300 reactor. CNSC staff will review any new code versions used to ensure the safety case remains valid.

2.4.2.3.4.3 Atmospheric Dispersion and Dose Analysis Method (ADDAM)

The ADDAM computer code is intended to calculate the distribution of radiation doses to individuals or to a population, following the airborne release of radioactive material into the environment following a DBA. The dispersion of radioactive material is dependent on the characteristics of the release, existing meteorological conditions, and overall nearby receptor characteristics.

CNSC staff conclude that the ADDAM code is appropriately applied to the BWRX-300 design, and that it meets the qualification computer codes expectations.

2.4.2.3.5 Analysis of Normal Operation Conditions

CNSC staff note that the BWRX-300 design will continue to progress, and that the corresponding safety analysis for normal operating conditions will consequently continue to iterate alongside the design progression. CNSC staff will continue to review the design information, as it becomes available, to ensure that the safety analyses remain compliant with applicable regulatory expectations.

2.4.2.3.6 Analysis of Anticipated Operational Occurrences

CNSC staff note that the design will continue to progress, and that the corresponding safety analysis for anticipated operational occurrences will consequently continue to iterate alongside the design progression. CNSC staff will continue to review the design information, as it becomes available, to verify that the safety analyses remain compliant with applicable regulatory expectations.

2.4.2.3.7 Analysis of Design Basis Accidents

CNSC staff have independently reviewed GE Hitachi's design inputs into the TRACG thermal-hydraulic code as well as the use of the TRACG outputs as boundary conditions into the GOTHIC containment computer code, as described in NK054-REP-03555-00001 – *BWRX-300 Containment Evaluation Method* [R2.4-38]. CNSC staff used these codes to independently reproduce and verify the provided assessment, as well as perform a sensitivity analysis for large and small LOCA events.

CNSC staff also analysed the plant model configuration, evaluation of reactor phenomena, the initial and boundary conditions, modelling results, and compliance with DSA acceptance criteria in the simulation of large and small LOCA events. CNSC staff's review found that, commensurate with the state of the BWRX-300 design and versions of computer codes, the modelling, and results of small and large LOCA events using the TRACG code are acceptable to determine the mass and energy releases as a boundary input to the GOTHIC code. However, how uncertainties in the analyses are addressed in the safety analysis models remains unclear to CNSC staff.

CNSC staff note that this information will continue to evolve as the design of the BWRX-300 reactor continues to mature. OPG will be required to provide further information for CNSC staff review against applicable regulatory expectations for DSA as it becomes available. This commitment is also identified in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

2.4.2.3.8 Analysis of Design Extension Conditions

CNSC staff reviewed the severe accident analysis information provided in Chapter 15 of the PSAR and noted that it contained high-level descriptions of Design Extension Conditions (DEC) and plant states. CNSC staff acknowledge that the safety analyses will iterate as the design progresses, and OPG has committed to provide further updates, including detailed analysis on DECs. CNSC staff will continue to review the provided information to verify that the analyses meet the applicable regulatory expectations. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* identifies these commitments.

2.4.2.4 Criticality Safety

CNSC staff reviewed the nuclear criticality safety analyses documented in the *BWRX-300 Preliminary Safety Analysis Report* [R2.4-1] (PSAR) as well as applicable supporting documentation such as NK054-REP-01210-00191 – *BWRX-300 Darlington New Nuclear Project (DNNP) Out of Core Criticality Safety Analysis Demonstration* [R2.4-47].

CNSC staff's review of the supporting documentation noted that OPG has assumed an adequate margin of subcriticality under both normal and credible abnormal conditions consistent with regulatory expectations. This representative analysis is sufficient as the indicated margins of subcriticality are greater than the minimum specified.

CNSC staff note that this representative set of credible abnormal conditions, and the subcriticality analysis, is sufficient for purposes of the PSAR; however, an updated analysis based on the final design will be required for updated Safety Analysis Reports.

CNSC staff concluded that OPG performed an analysis of the consequences of such an event using a state-of-the-art code, validated for the assessment of criticality accidents as per regulatory expectations.

CNSC staff conclude that OPG has demonstrated that the consequences of a postulated criticality accident scenario do not exceed the generic criterion that would trigger a public evacuation.

CNSC staff determined that OPG's commitment to use gamma monitoring equipment in the spent fuel pool, with the set of instrumentation and equipment worn by personnel in the fuel handling areas, is sufficient for purposes of the PSAR; however, an updated analysis based on the final design will be required for updated Safety Analysis Reports.

In conclusion, the set of analyses and equipment described in OPG's application and supporting documentation, summarised above related to criticality safety, is sufficient for the purposes of a licence to construct. However, further detailed information is expected as the design of the BWRX-300 reactor progresses. Updated analyses based on the final design will be required for updated Safety

Analysis Reports and the licence to operate application, should this project proceed.

CNSC staff conclude that OPG has demonstrated it meets regulatory expectations related to criticality safety.

2.4.2.5 Severe Accident Analysis

CNSC staff reviewed the severe accident analysis documented in Chapter 15 of the PSAR as well as supporting documentation.

OPG will be required to provide sufficient BDBA deterministic safety analysis documentation to demonstrate compliance with expectations. This commitment is also identified in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

2.4.2.6 Event Mitigation

Based on the design of the BWRX-300 and a safety strategy framework that integrates Defence Lines and the defence in depth concept, CNSC staff note that the design has incorporated operating experience as well as deterministic, risk-informed, and performance-based analyses. OPG states that these safety analyses demonstrate that the plant design meets underlying safety objectives and acceptance criteria are met.

OPG has committed to provide further detailed information regarding the probabilistic safety and severe accident assessments for the BWRX-300, as the design and safety assessments continue to iterate. CNSC staff will review the provided documentation to verify that the PSA meets regulatory expectations. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* also identifies these commitments.

2.4.3 Key References for this SCA

[R2.4-1] OPG Report, NK054-SR-01210-10000 – *Darlington New Nuclear Project – BWRX-300 Preliminary Safety Analysis Report*, revision 1, dated 31 March 2023.

[R2.4-2] CNSC Regulatory Document, REGDOC-1.1.1 – *Site Evaluation and Site Preparation for New Reactor Facilities*, version 1.2, published July 2022.

[R2.4-3] OPG document, NK054-REP-01210-00144 – *BWRX-300 Darlington New Nuclear Project (DNNP) Hazards Analysis Methodology*, revision 0, dated September 2022 (Protected).

[R2.4-4] OPG document, NK054-REP-01210-00158 – *BWRX-300 Darlington New Nuclear Project (DNNP) Hazard Analysis Results*, revision 0, dated October 2022 (Protected).

[R2.4-5] CSA Group Standard, N293 – *Fire Protection for Nuclear Power Plants*, 2012 edition (reaffirmed in 2017).

[R2.4-6] OPG document, NK054-REP-03500.8-00001 – *DNNP Site-Specific Probabilistic Seismic Hazard Assessment*, revision 0, dated December 2022.

[R2.4-7] OPG document, NK054-REP-02730-00003 – *Wind Gust Analysis Memorandum*, revision 0, dated December 2022.

[R2.4-8] OPG document, NK054-CORR-01210-1015770 – *Engineering Direction for Darlington New Nuclear Project Design Basis Tornado Values*, dated June 2022.

[R2.4-9] ASME standard, ASME/ANS RA-S-1.4 – *Probabilistic Risk Assessment Standard for Advanced Non-Light Water Reactor Nuclear Power Plants*, 2021 edition.

[R2.4-10] IAEA guidance document, SSG-18 – *Meteorological and Hydrological Hazards in Site Evaluation for Nuclear Installations*, published in 2011.

[R2.4-11] OPG document, NK054-REP-02730-00001 – *BWRX-300 Flood Hazard Assessment*, dated 30 November 2022.

[R2.4-12] OPG document, NK054-PLAN-07007-00001 – *Darlington New Nuclear Project Strategy for Addressing Climate Change Impacts*, revision 0, dated October 2022.

[R2.4-13] Environment and Climate Change Canada (ECCC) guidance document, *Technical Guide for Strategic Assessment of Climate Change: Assessing Climate Change Resilience*, published in March 2022.

[R2.4-14] OPG document, NK054-REP-07007-00001 – *Darlington New Nuclear Project Phase 1 Climate Change Risk Assessment Summary Report*, revision 0, dated July 2023 (Protected).

[R2.4-15] OPG document, NK054-REP-07007-00002 – *Darlington New Nuclear Project Phase 2 Climate Change Risk Treatment*, revision 0, dated June 2024 (Protected).

[R2.4-16] OPG document, NK054-REP-01210-00175 – *Darlington New Nuclear Project Phase 1 Geotechnical Investigation Report: Volume 2 (Power Block)*, Sheet 2 (Protected).

[R2.4-17] OPG document, NK054-REP-01210-00187 – *Darlington New Nuclear Project Phase 2 Geotechnical Investigation (Condenser Cooling Water System)*, dated June 2023 (Protected).

[R2.4-18] AtkinsRéalis document, DA1-SNC-Y99-RNN-TSPC-GT-0001 – *Excavation and Backfill Specifications for Power Block Area*, dated March 2024.

[R2.4-19] OPG document, NK054-REP-03500.8-00002 – *Darlington New Nuclear Project: Seismically-Induced Soil Liquefaction Assessment*, revision 1, dated February 2023 (Protected).

[R2.4-20] CNSC Regulatory Document, REGDOC-2.4.2 – *Probabilistic Safety Assessment (PSA) for Reactor Facilities*, version 2, published May 2022.

[R2.4-21] OPG document, NK054-REP-01210-00144 – *BWRX-300 DNNP Probabilistic Safety Assessment Methodology*, revision 0, dated September 2022.

[R2.4-22] CNSC letter to M. Knutson, *DNNP – CNSC Staff Response to OPG Responses to CNSC Staff Comments on Probabilistic Safety Assessment Methodology and Hazards Analysis Methodology*, dated July 2023.

[R2.4-23] OPG document, NK054-CORR-00531-10860 – *DNNP: Request for CNSC Acceptance for OPG Use of Computer Codes in BWRX-300 Probabilistic Safety Assessments*, dated October 2023.

[R2.4-24] OPG document, NK054-REP-01210-00163 – *BWRX-300 Probabilistic Safety Assessment Summary Report*, revision 0, dated September 2022 (Protected).

[R2.4-25] OPG document, NK054-REP-01210-00158 – *BWRX-300 DNNP Hazard Analysis Results*, revision 0, dated October 2022 (Protected).

[R2.4-26] ASME/ANS Standard, RA-SB-2013 – *Standard for Level I / Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications (Addenda to ASME/ANS RA-S-2008)*, 2013 edition.

[R2.4-27] ASME/ANS Standard, RA-S-1.2-2019 – *Severe Accident Progression and Radiological Release (Level 2) PRA Standard for Light Water Reactors*

[R2.4-28] IAEA Safety Standard, SSG-3 – *Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants*, published in 2010.

[R2.4-29] IAEA Safety Standard, SSG-4 – *Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants*, published in 2010.

[R2.4-30] IAEA document, INSAG-10 – *Defence in Depth in Nuclear Safety*, published in 1996.

[R2.4-31] CSA Group standard, N290.17 – *Probabilistic Safety Assessment for Nuclear Power Plants*, 2017 edition.

[R2.4-32] USNRC document, NUREG-0800 – *Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition*.

[R2.4-33] USNRC Regulatory Guide, RG 1.200 – *Acceptability of Probabilistic Risk Assessment Results for Risk-Informed Activities*, revision 3.

[R2.4-34] CNSC regulatory document, REGDOC-2.4.1 – *Deterministic Safety Analysis*, version 1, published May 2014.

[R2.4-35] IAEA Specific Safety Guide, SSG-61 – *Format and Content of the Safety Analysis Report for Nuclear Power Plants*, published in 2021.

[R2.4-36] CSA Group Standard, N286.7 – *Quality Assurance of Analytical, Scientific, and Design Computer Programs*, 2016 edition, reaffirmed in 2021.

[R2.4-37] GE Hitachi document, NEDC-33987 – *TRACG Application for BWRX-300*, revision 0, dated September 2022 (Protected).

[R2.4-38] OPG document, NK054-REP-03555-00001 – *BWRX-300 Containment Evaluation Method*, revision 3 (Protected).

[R2.4-39] USNRC and CNSC Licensing Topical Report, *Joint Report on GE Hitachi's Containment Evaluation Method*, dated April 2022.

[R2.4-40] OPG document, *BWRX-300 Safety Strategy Implementation Process*, revision X, dated Y (e-Doc Z).

[R2.4-41] GE Hitachi Document, NEDE-32176P – *TRACG Model Description*, revision 4 (Proprietary).

[R2.4-42] GE Hitachi Document, NEDE-32177P – *TRACG Qualification*, revision 3 (Proprietary).

[R2.4-43] GE Hitachi Document, NEDC-32725P – *TRACG Qualification for SBWR (Volumes 1 and 2)*, revision 1 (Proprietary).

[R2.4-44] GE Hitachi Document, NEDC-33080P – *TRACG Qualification for ESBWR Class III*, revision 1 (Proprietary).

[R2.4-45] OPG document, NK054-REP-01210-00164 – *TRACG Application for BWRX 300* (Proprietary).

[R2.4-46] CNSC Regulatory Document, REGDOC-2.4.3 – *Nuclear Criticality Safety*, version 1.

[R2.4-47] OPG document, NK054-REP-01210-00191 – *BWRX-300 Darlington New Nuclear Project (DNNP) Out of Core Criticality Safety Analysis Demonstration*, revision 0, dated December 2023 (Protected).

[R2.4-48] International Standards Organisation (ISO) standard, 16117 – *Nuclear Criticality Safety: Estimation of the Number of Fissions of a Postulated Criticality Accident*, 2013 edition.

[R2.4-49] CNSC Regulatory Document, REGDOC-2.3.2 – *Accident Management*, version 2.

2.5 Physical Design

The Physical Design SCA relates to activities that have an impact on the ability of systems, components, and structures to meet and maintain their design basis, given new information arising over time, and taking changes in the external environment into account. The specific areas that comprise this SCA at the DNNP include:

- Site Characterisation
- Design Governance (referred to as Design Principles and Requirements)
- Facility Design
- Structure Design
- System Design

In addition to the specific areas above, this SCA also includes aspects of the ageing management specific area from the Fitness for Service SCA, as described in version 2 of REGDOC-1.1.2.

2.5.1 Regulatory Requirements and CNSC Staff Conclusions

The regulatory requirements forming the foundation for CNSC staff's recommendation, associated with the Physical Design SCA, include the following:

- The *Nuclear Safety and Control Act*, subsection 24(4).
- The *General Nuclear Safety and Control Regulations*, paragraphs 3(1)(d), and 3(1)(i).
- The *Class I Nuclear Facilities Regulations*, paragraphs 3(a), 3(b), 5(a), 5(b), 5(d), 5(e), and 5(g).
- The *Nuclear Security Regulations*, section 16, paragraph 3(b)

The regulatory expectations forming the foundation for CNSC staff's recommendations, associated with the Physical Design SCA, include the following:

- REGDOC-1.1.2 – *Licence Application Guide: Guide to Construct a Reactor Facility (version 2)*, subsection 4.5 [R1-6].
- REGDOC-2.4.1 – *Deterministic Safety Analysis (version 1)*
- REGDOC-2.4.3 – *Nuclear Criticality Safety (version 1.1)*
- REGDOC-2.5.1 – *General Design Considerations: Human Factors (version 1)*
- REGDOC-2.5.2 – *Design of Reactor Facilities (version 1)*, subsections 7.5 – 7.10, 7.12, 7.13, 7.15, 7.16 – 7.18, 8.1 – 8.10, 8.12, 8.13, and 10.1.
- REGDOC-2.6.1 – *Reliability Programs for Nuclear Power Plants (version 1)*
- REGDOC-2.6.3 – *Ageing Management (version 1)*.

The following subsections provide a brief overview of CNSC staff's review of the application and whether OPG has met the regulatory requirements for a licence to construct. CNSC staff's detailed assessment and review of OPG's application and supporting documentation for the Physical Design SCA can be found throughout the dedicated subsection A.2 – *Physical Design*.

CNSC staff determined that OPG has met the regulatory requirements; however, as outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* OPG has committed to provide additional detailed information as the design progresses. These regulatory commitments have been linked to either RHP-1: Installation of Reactor Building Foundation, RHP-2: Installation of the Reactor Pressure Vessel, or RHP-3: Fuel-Out Commissioning, to ensure CNSC staff are satisfied with the information OPG has provided prior to moving into the next stage of the project construction.

CNSC staff's review has determined that the information provided for the design of the reactor, along with the commitments outlined in the Appendix to provide additional design information, is sufficient for CNSC staff to determine that OPG has met regulatory requirements and to support a recommendation that the Commission issue a licence to construct.

Three standardised licence conditions are included in the proposed licence. They are summarised as follows:

- Licence condition 5.1 will require that the licensee implements and maintains a design program that is inclusive of all elements of the design of the BWRX-300 reactor presented in this subsection.

- Licence condition 5.2 will require that the licensee implements and maintains a pressure boundary program, specific to the requirements of the BWRX-300, in compliance with Canadian regulatory requirements.

- Licence condition 5.3 will require that the licensee maintain an equipment and structure qualification program.

Compliance verification criteria for these licence conditions are included in the draft *Licence Conditions Handbook*.

2.5.2 Discussion

CNSC staff's review of the design of the BWRX-300 reactor and plant, based on the requirements of REGDOC-1.1.2 and version 1 of REGDOC-2.5.2 – *Design of Reactor Facilities* [R1-8] is described in the subsections below.

2.5.2.1 Site Characterisation

Paragraph 5(b) of the *Class I Nuclear Facilities Regulations* require that an application for a licence to construct contain a description of the environmental baseline characteristics of the site and surrounding area.

Subsection 4.5.2, *Site Characterisation*, of REGDOC-1.1.2 further explains this requirement by stating that the application should refer to, or summarise, the information submitted in any relevant environmental review or licensing documentation, including environmental assessments or previous licence applications. The results of site characterisation are used in the design of the facility and its supporting safety analyses, and therefore the application should confirm the site characteristics, including for external events, and assess the effects of any updated information.

CNSC staff provide more information related to the characterisation and continued suitability for the DNNP in subsection A.2.1 – *Site Characterisation*.

Site Location and Topography

The DNNP site is located to the east of the existing Darlington Nuclear Generating Station (DNGS), located in the Municipality of Clarington, in Ontario, approximately 65 kilometres east of the City of Toronto, on the northern shore of Lake Ontario. The site itself consists of approximately 0.18 square kilometres of land, bounded to the north by Energy Drive, to the south by Lake Ontario, to west by the Holt Road, and to the east by the St. Marys Cement plant. The site is also bisected by the Canadian National Railway (CNR) line in an east-to-west direction.

Towards the east, the site rises from an approximate elevation of 80 metres Canadian Geodetic Datum (CGD) at the southwest corner to 88 metres CGD just north of the shoreline bluff, along a horizontal distance of about 400 metres, to an elevation of 102 metres at the boundary of the Darlington Creek watershed, before then sloping down to its main branch near the eastern boundary of the site.

A higher ridge, starting from the shoreline just east of Raby Head, extends diagonally across the site in a northwesterly direction, with elevation of up to 15 metres above the surrounding terrain. Offshore from the site, the Lake Ontario bottom gradually slopes away from the shore reaching a depth of about 6 metres at 425 metres from the shore, and a depth of 14 metres approximately 1.2 kilometres from the shore.

Atmospheric and Meteorological Characteristics

As described in CMD 24-H2, the ambient air quality has generally improved in Ontario, as compared to the conditions documented in previous project licensing stages, due primarily to the shutdown of coal-fired power plants and government programs and initiatives. Staff note that current air quality trends continue to indicate that smog is not a concern in the York-Durham Region; however, the region experienced a short-term deterioration in air quality in June 2023 due to particulates in air from forest fires.

Geology and Geotechnical Data

The regional and site geology in the area where the DNNP site is located is characterised by upper and lower till layers with predominant glacial deposits between these layers, overlaying bedrock. The glacial deposits are associated with the Oak Ridges Moraine.

Hydrology and Hydrogeology

CNSC staff note that surface drainage at the DN site is divided by the CNR line running across the site. The northwest portion of the site has been modified from its natural condition during the previous construction of the DNGS, and currently drains south into various outlets including the DNGS forebay, and west towards Tooley Creek. The north-central area and the northeast portion (i.e., the areas east of Holt Road) drain south into the CNR right-of-way and then eastward towards the Darlington Creek.

Groundwater Flow

CNSC staff note that the regional groundwater flow, and the groundwater flow at the DNNP site, generally follows the topography from the higher terrain elevations in the north to the lower elevation terrain towards the south. This flow is generally driven by recharge from rainfall and snowmelt infiltration across the area, and at higher elevations along the Oak Ridges Moraine north of the DNNP site, with Lake Ontario as the ultimate discharge point. The shallow groundwater system at the DNNP site deviates from this flow pattern near surface water features and local recharge areas.

Based on a review of the 2021 site geotechnical investigation [R2.4-16], CNSC staff note that groundwater flow patterns at the DNNP site have been characterised into three hydro-stratigraphic units: Unit 3 ‘shallow groundwater,’ Units 4 and 5 ‘intermediate groundwater,’ and Units 6a and 6b ‘groundwater in bedrock.’ The groundwater flow direction in the upper and lower till layers (i.e., Units 3 and 5) is inferred to be in a southwesterly direction, and towards the south-southeast in the intermediate glaciolacustrine (Unit 4a) and shallow bedrock layers (Units 6a and 6b). The groundwater level at the site is anticipated to be present between an elevation of approximately 80 to 86 metres Canadian Geodetic Datum (CGD), which corresponds to subsurface depths of about 2 to 8 metres below the finished facility grade of 88 metres CGD.

Groundwater Quality

CNSC staff previously reviewed the updated groundwater baseline data, for the period up to and including 2018, as part of the renewal application for OPG’s existing Licence to Prepare Site, including volatile organic compounds (VOC) and other substances. OPG has prepared and submitted groundwater monitoring reports covering the years 2019 – 2021, which analysed the groundwater for contaminants of potential concern (COPC) such as tritium, benzene, toluene, ethylbenzene, xylene, and petroleum hydrocarbons. CNSC staff review of these groundwater monitoring reports determined that the quality of the groundwater at

the DNNP remains consistent with the data presented in previous licensing applications.

The groundwater at Darlington Nuclear site is not potable and not used for drinking. Should the Commission issue a licence to construct, OPG will be required to implement and maintain a groundwater monitoring program during construction, in accordance with CSA N288.7 and in compliance with permits issued by the MECP. OPG is expected to monitor the dewatering discharge rate and confirm that groundwater discharged from the dewatering system meets Provincial guidelines.

Biological Data

OPG document NK054-REP-01210-0001 – *DNNP Supporting Environment Studies* [R2.5-3] and discussed in CMD 24-H2, there have been several terrestrial species at risk identified on the DN site, including: Butternut tree, Monarch butterflies, Least Bittern, Peregrine Falcons, Short-eared Owl, Common Nighthawk, Whip-por-will, Eastern Wood Pewee, Bank Swallows, Barn Swallows, Bobolink, Eastern Meadowlark, Snapping Turtle, Little Brown Myotis, Tri-Coloured Bat, and the Northern Myotis bat.

CNSC staff provide further details of the biological diversity at the Darlington site in subsection A.2.1.6 – *Biological Data*.

Radioactivity and Hazardous Substances

The baseline radiation and radioactivity studies include the natural background radiation, background from anthropogenic sources (e.g., fallout from nuclear testing and releases from other nuclear activities), and releases from the nearby DNGS.

OPG monitors radiation and radioactivity through its Environmental Monitoring Program for the entire DN site. The results of this monitoring are published annually and made available to the public. As described in section 4 of OPG report N-REP-03443-10027 – *2021 Results of Environmental Monitoring Programs* [R2.5-6], the annual public dose resulting from activities on the DN site was 0.60 micro-Sieverts, represented by the adults of the Farm critical group. This dose is < 0.1 % of the regulatory dose limit of 1,000 µSv per year defined in the *Radiation Protection Regulations* for a member of the public.

Between the period of 2016 to 2021, public dose estimates for critical groups near the DN site are at most 0.08% of the regulatory public dose limit, and approximately 0.06% of the dose of 1.40 mSv per year (1,400 µSv/year) from natural background radiation.

OPG completed a soil characterisation study in 2021, documented in NK054-REP-07330-00053 [R2.5-8], and submitted the results for CNSC staff review. Sampling locations were chosen based on an evaluation of current and historical

use of the DNNP land, a comparison of existing soil quality data against current standards and criteria, and the identification of areas of potential concern.

CNSC staff noted the soil characterisation study identified the presence of petroleum hydrocarbons, metals, hydride-forming metals, and other regulated parameters marginally above Ontario MECP Table 3, *Full-Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition*, standards [R2.5-9]. Staff further note these results were consistent with soil characterisation typical of industrial areas.

CNSC staff reviewed OPG's application and its supporting documentation as related to the evaluation of site characteristics and conclude that the information provided meets regulatory requirements and expectations. The site remains suitable for continued nuclear development.

2.5.2.2 Design Principles and Requirements

2.5.2.2.1 Design Quality Assurance

Paragraph 5(g) of the *Class I Nuclear Facilities Regulations* requires that an application for a licence to construct a nuclear facility contain "*the proposed quality assurance program for the design of the nuclear facility*."

Subsection 4.5.3, *Design Principles and Requirements*, of REGDOC-1.1.2 states that the application describe, to the extent practicable, the design principles and requirements covering processes for the overall design of the facility. Additionally, subsection 4.1.3, *Organization*, of REGDOC-1.1.2 specifies that the applicant is expected to confirm it is in control of the licensed activities, when entering contracts with external organisations.

CNSC staff's review and assessment of OPG's design quality assurance program, as described in the PSAR and supporting documentation, is provided in subsection A.2.2.1 – *Design Quality Assurance*.

OPG has selected an Integrated Project Delivery (IPD) model for the DNNP, and the following sections outline roles and responsibilities with respect to design governance for the IPD.

Ontario Power Generation (OPG)

For the DNNP, GEH will be the Designer, and AtkinsRéalis (formerly known as SNC Lavalin) will be the Architect and Engineering firm. OPG will perform oversight of the GEH design program while GEH holds the role of the Design Authority ensuring the technical adequacy of the design of the BWRX-300 powerblock. OPG's Chief Nuclear Engineer has the overall accountability for the DNNP, with OPG remaining the Design Authority for areas outside of the BWRX-300 powerblock.

OPG states that the GE Hitachi (GEH) design quality assurance (QA) program will be used for the design of the BWRX-300. OPG document NK054-PLAN-01210-00008 – *Darlington New Nuclear Project: Program Management Plan* [R2.5-10] describes the OPG governance hierarchy and identifies other Management System documents applicable to the DNNP under the authority of OPG's top-level document N-CHAR-AS-0002 – *Nuclear Management System* [R2.5-11].

OPG document NK054-PLAN-01210-00035 – *DNNP Engineering Oversight Plan* [R2.1-11] requires OPG to be accountable to provide project management and oversight to ensure that all partners engaged in engineering, procurement, and construction deliver the products and services with acceptable quality and project controls.

During the design and construction phases, GEH is responsible for the technical accuracy of the GEH design, as GEH retains design authority. OPG specifies that interfacing requirements, including documents reviewed and accepted by OPG, are defined. OPG document NK054-COI-01210-00002 – *Darlington New Nuclear Project Contractor/Owner Interface Requirements* [R2.5-15] is meant to specify all interfacing documents for all DNNP contractor partners. However, CNSC staff note that NK054-COI-01210-00002 is not yet finalised. OPG has committed to providing the document once finalised. OPG's Owner's Engineering group is responsible for the acceptance of design packages following commissioning, where the Design Authority turns the design over to OPG. This is not expected to occur until the operation phase.

General Electric Hitachi

The role of GEH as the Design Authority is established in GEH document *Design Authority Management Plan* which outlines its roles, responsibilities, and functions for DNNP. CNSC staff reviewed this GEH procedure and concluded that some expectations of subsection 5.1, *Design Authority*, of REGDOC-2.5.2 – *Design of Reactor Facilities* were not met as it relates to organisational interfaces and configuration control during design documentation turnover. OPG has committed to providing a revised document for CNSC staff review.

To ensure compliance with CNSC requirements, GEH performed a gap assessment of its documentation against the requirements of CSA N286 – *Management System Requirements for Nuclear Facilities (2012)*, CSA N286.7 – *Quality Assurance of Analytical, Scientific, and Design Computer Programs* [R2.4-36] standards, as well as REGDOC-2.5.2 – *Design of Reactor Facilities (version 1)*. For CNSC requirements not met by the USNRC approved plan, GEH will develop DNNP project-specific Quality Plans.

CNSC staff review of GEH's documentation determined that the design process is documented, and any modifications needed can be resolved. Should the Commission issue a licence to construct, CNSC staff will conduct compliance

verification activities to verify that the design QA program continues to meet regulatory expectations.

AtkinsRéalis

AtkinsRéalis, as the Architect-Engineer, will be carrying out engineering design activities for the detailed design of the BWRX-300 powerblock, as well as for areas outside of the powerblock during all project phases. AtkinsRéalis' interface with powerblock design activities will be important for the conduct of commissioning tests and eventual turnover of the reactor to OPG for operations. The AtkinsRéalis management system was developed to meet the requirements of CSA N286.

CNSC staff will continue to review AtkinsRéalis' documentation, including those describing interface with GEH and OPG to ensure CNSC regulatory expectations have been met. Should the Commission issue a licence to construct, these documents would be provided at the appropriate stage in the construction schedule. CNSC staff will conduct compliance verification activities to ensure the AtkinsRéalis QA program continues to meet regulatory requirements.

Conclusions

OPG has documented its oversight of design activities in multiple plans that must be implemented by all contract partners involved in design activities. The design is independently completed by GEH, with OPG Engineering staff embedded in various project teams and conducting oversight activities.

CNSC staff have reviewed the application and supporting information and conclude that the submitted design QA program is sufficient to support a recommendation to issue a licence to construct. CNSC staff will continue to perform compliance verification activities regarding the control and oversight of the design throughout the licence period and will further assess the interfaces between OPG's and their contractor partners' design programs as necessary.

2.5.2.2.2 Identification of Facility States and Operational Configurations

CNSC staff's review and assessment of OPG's identification of plant states and operational configurations, as described in the PSAR and supporting documentation, is provided in subsection A.2.2.2 – *Identification of Facility States and Operational Configurations*.

Subsection 4.5.3 of REGDOC-1.1.2 outlines expectations that an application for a licence to construct identify all facility states and operational configurations in accordance with REGDOC-2.4.1 – *Deterministic Safety Analysis* [R2.4-34].

Subsection 7.3, *Plant States*, of REGDOC-2.5.2 – *Design of Reactor Facilities* further describes that all identified plant states shall grouped into one or more of

the following categories: normal operation, anticipated operational occurrences (AOO), design-basis accidents (DBA), and design extension conditions (DEC).

Design requirements of structures, systems, and components (SSC) are developed to ensure that the plant is capable of meeting applicable requirements for each defined plant state. CNSC staff review of OPG's application shows that the plant states are identified through safety analyses and described in Chapters 15 and 16 of the PSAR [R2.4-1].

Chapter 16 of the PSAR describes the methodology for identifying and describing Operational Limits and Conditions (OLC), based on REGDOC-2.5.2 expectations, and derived from the analyses and evaluations summarised in Chapter 15 of the PSAR. CNSC staff reviewed Chapter 16 and identified a need for OPG to provide additional detailed information on the OLCs as the design progresses, including documenting the basis for which the OLCs are derived. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* identifies this commitment.

Table A-6, Table A-7, and Table A-8 of Appendix A provide an overview of operating states for the BWRX-300, for the normal operations, AOOs, and DBAs, respectively. CNSC staff reviewed OPG's documentation and identified no concerns regarding how OPG described its operating states.

2.5.2.2.3 Radiation Protection in Design

CNSC staff's review and assessment of OPG's implementation of radiation protection principles in the design is provided in subsection A.2.2.3 – *Radiation Protection in Design*.

OPG has provided an occupational dose estimate for collective effective dose, based on available BWR design information and operating experience, with a conservative estimate of 0.49 person-Sieverts (p-Sv) per year for a single unit under normal operating conditions. This is significantly lower than the average collective occupational doses reported at operating CANDU and BWR reactors.

Collective dose is a tool that can be used as a control for occupational exposures; however, cannot be compared to the regulatory dose limits from the *Radiation Protection Regulations* or used to assess predicted health effects. OPG has committed to submitting an occupational dose assessment for individual NEWs as the design progresses. This commitment is outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

OPG has developed NK054-MAN-01210-00002 – *BWRX-300 DNNP ALARA Design Criteria* [R2.5-17] to ensure that radiation protection principles are considered in the design of the BWRX-300 throughout the facility's lifecycle and in all operational states. Measures to mitigate doses to personnel on-site during accident conditions are also considered.

OPG has committed that the overall shielding design for protection of plant personnel will ensure that systems containing radioactivity are shielded in accordance with the zoning criteria and will take into consideration the buildup of nuclear substances over the lifetime of the facility. Additional information supporting the shielding analysis will be provided once it is available, as outlined in Appendix D.2.

OPG has committed to provide additional information relating to airborne concentrations and contamination levels within the facility prior to the construction of internal Reactor Building structures.

A Process Radiation Monitoring and Environmental Monitoring System (PREMS) will monitor area dose rates and airborne radioactivity within the facility during all operational states, including post-accident conditions. The selection of appropriate equipment, locations, monitoring ranges, and alarming setpoints for PREMS equipment is expected to be finalised as the design progresses, and OPG has committed to providing this information prior to the construction of internal Reactor Building structures.

CNSC staff have reviewed OPG's documentation in support of ensuring that radiation protection and ALARA principles are considered in the design of the BWRX-300 and conclude that OPG has sufficient provisions to ensure ALARA principles are incorporated in the design of the facility. CNSC staff will continue to verify OPG's design provisions for radiation protection as outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* to ensure that the design meets regulatory requirements and expectations.

2.5.2.2.4 Safety Objectives, Goals, and Functions

An application for a licence to construct should describe how the CNSC safety objectives and safety goals are met, in accordance with REGDOC-2.5.2. The application should also describe how the fundamental safety functions (FSF) have been incorporated into the design of the reactor.

The FSFs prevent or mitigate radiological releases by ensuring that the physical barriers to fission product releases—i.e., the fuel matrix, fuel cladding, the Reactor Coolant Pressure Boundary (RCPB), and containment—remain effective.

Subsection 3.1.1 of OPG's PSAR describes the general nuclear safety objective and three complementary safety objectives to inform the design and safety analysis of the BWRX-300, in accordance with REGDOC-2.5.2. Detailed information on how these safety objectives are met is provided throughout the PSAR.

Subsection 3.1.2.2 of the PSAR also establishes the dose acceptance criteria based on the requirements of REGDOC-2.5.2—that is, 0.5 milliSieverts (mSv) for any AOO, and 20 mSv for any Design-Basis Accident (DBA). Chapter 15 of OPG's

PSAR describes the results of the safety analysis to demonstrate that dose acceptance criteria are met for AOOs and DBAs. CNSC staff's review of these analyses is documented in subsections 2.4.2.2 – *Probabilistic Safety Analysis* and 2.4.2.3 – *Deterministic Safety Analysis*.

CNSC staff have reviewed the described BWRX-300 safety objectives and goals and determined they have been established in accordance with CNSC regulatory expectations. OPG will be required to submit detailed design information for CNSC staff review, as the design progresses, to demonstrate that the safety objectives and goals remain in accordance with the expectations of REGDOC-2.5.2. These commitments are outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

2.5.2.2.5 Defence in Depth

CNSC staff's review and assessment of OPG's defence in depth strategy, as described in the PSAR and supporting documentation, is provided in subsection A.2.2.5 – *Defence in Depth*.

Defence in depth is an approach in the design of nuclear facilities that ensures that multiple and, where practicable, independent barriers for defence are provided for protection against AOOs and accidents. For nuclear reactors, implementation of the defence in depth principle protects against the exposure of workers, members of the public, or release of radioactivity to the environment exceeding safe levels.

The implementation of defence in depth in the BWRX-300 design forms the basis for the safety strategy to ensure an adequate level of safety is achieved in the design. Defence in depth is applied to provide an overlapping series of levels of defence for the prevention of accidents, and to ensure appropriate protection of workers and the public if accident prevention fails. The BWRX-300 design considers two types of defensive layers:

- Physical barriers put in place to prevent the release of radioactivity. These barriers include the fuel matrix itself, the fuel cladding, the Reactor Coolant Pressure Boundary (RCPB), and the containment structure. The integrity of one or more of these physical barriers must be maintained to prevent unacceptable releases.

- A combination of active, passive, and inherent safety features used to minimise the challenges to physical barriers, to maintain the integrity of those barriers and, in the event a barrier has been breached, to ensure the integrity of the remaining barriers.

The BWRX-300 applies the defence in depth concept through the fundamental safety functions outlined in subsection 2.5.2.2.4 – *Safety Objectives, Goals, and Functions* above, and described in subsection 3.4.2.1.1 of the PSAR [R2.4-1]. These fundamental safety functions define the interface between the defence lines

and the physical barriers. If the fundamental safety functions are performed successfully, the corresponding physical barriers remain effective.

OPG provided NK054-REP-01210-00183 – *BWRX-300 Darlington New Nuclear Project (DNNP) Safety Strategy* [R2.5-18] that provides a description of how the BWRX-300 design applies the Defence in Depth concept. The design proposes five Defence Lines (DL), or levels, identified as DL1 through DL5, consistent with REGDOC-2.5.2 – *Design of Reactor Facilities (version 1)*:

- DL1 includes features and functions that are aimed at the prevention of deviations from normal operation and the prevention of failures of SSCs important to safety. It is also intended to minimise the potential for failures in subsequent defence lines through assuring high quality and conservatism in the design, construction, and operation of the plant. However, this defence line does not include normal plant functions.
- DL2 includes features and functions that are aimed at detection and control of deviations from normal operation.
- DL3 includes functions that are intended to act to mitigate postulated initiating events (PIE) leading to accident conditions. Systems and equipment included in DL3 are designed for high reliability through elimination of support systems.
- DL4 features are further subdivided into DL4a and DL4b functions. DL4a functions are those that are intended to mitigate Design Extension Conditions (DEC) that do not cause core damage and provide means to maintain the plant in a safe state in the event of a DL3 SSC being unable to perform its function due to failure. DL4b functions are those intended to mitigate DECs that cause core damage and aim to maintain containment functions for extreme events, multiple events, or multiple failures that challenge or defeat DL2, DL3, and DL4a functions. DL4b also provides functions to mitigate the effects of a damaged core and limit radioactive releases to acceptable levels.
- DL5 includes features and functions that are intended to mitigate or reduce the consequences of radioactive releases through implementation of emergency preparedness measures.

CNSC staff note that a list of complementary design features is provided in Chapter 15 of the PSAR. CNSC staff's review of the complementary design features found that the PSAR did not provide sufficient details on features that could be required to provide make-up cooling water inventory to the RPV in unforeseen events. OPG has committed to provide additional design details for these complementary design features. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* identifies this commitment.

CNSC staff concluded that the BWRX-300 design includes independence in the implementation of the defence in depth concept. Where sharing of equipment

between defence lines was implemented (e.g., limited sensor sharing between DL2 and DL4a), CNSC staff's review determined that it meets the requirements to maintain independence of defence levels to the extent practicable, as required by REGDOC-2.5.2. Subsection 2.5.2.5.7 – *Instrumentation and Control* provides an overview of CNSC staff's review of the limited sharing of sensors between defence lines. CNSC staff will conduct a more detailed assessment as the design progresses, should the Commission issue a licence to construct.

CNSC staff concluded that OPG has implemented the principle of multiple overlapping physical barriers to ensure adequate defence in depth. Specifically, with the BWRX-300 design, four (4) physical barriers are provided: the fuel matrix, the fuel cladding, the Reactor Coolant Pressure Boundary (RCPB), and the Containment System.

However, CNSC staff's review determined that OPG's documentation lacked detailed design information DL4 or DL5 BDBA features including: the core catcher, Control Rod Drive (CRD) coolant make-up, alternate coolant make-up, passive autocatalytic recombiners, the ultimate pressure relief device, and vent line filters. OPG is required to provide this information prior to the installation of the Reactor Building foundation, as outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

In conclusion, CNSC staff determined that while the implementation of defence in depth with the BWRX-300 design is adequate for this stage of the design, OPG will be required to provide additional information to ensure the defence in depth concept is implemented in accordance with REGDOC-2.5.2 as the design progresses.

2.5.2.2.6 Safety Classification of Structures, Systems, and Components

An application for a licence to construct should describe the approach chosen in the design for the classification of structures, systems, and components (SSCs). This safety classification approach should also address requirements in REGDOC-2.5.2 and include criteria for deciding the appropriate design requirements for each class of SSCs.

Codes, standards, and industry guidelines collectively form the basis for the design, construction, installation, testing, inspection, maintenance, and quality assurance of SSCs commensurate with their safety classification. CNSC staff reviewed OPG's application and its supporting documentation to describe how the SSCs in the BWRX-300 design are categorised by safety class [R2.5-19]-[R2.5-20]. The following subsections describe CNSC staff's review of these supporting documents.

CNSC staff have reviewed OPG's proposed safety classification scheme for the BWRX-300 and determined that it meets the intent of safety classification expectations identified in subsections 7.1, 7.7, and 7.13.1 of REGDOC-2.5.2. OPG will provide additional information as the design progresses.

2.5.2.2.6.1 Safety Classification

OPG's approach to the safety classification of SSCs follows the implementation of the defence in depth principles. A safety classification is assigned to an SSC that performs a safety category function. This distinction is outlined in IAEA safety guide SSG-30 – *Safety Classification of Structures, Systems, and Components in Nuclear Power Plants*, incorporated as guidance in REGDOC-2.5.2.

OPG's PSAR and supporting documents outline OPG's approach to safety classification, establishing a straightforward one-to-one correlation between defence lines and functional safety categories, as follows:

Table 2-3: Summary of BWRX-300 Proposed Safety Classification

Safety Classification	Assigned to SSCs Performing a SC Function	Assigned to Defence Line
SC1	Safety Category 1	DL 3
SC2	Safety Category 2	DL4a
SC3	Safety Category 3	DL2, DL4b
Non-Safety Class	Not applicable	Not applicable

CNSC staff have raised concerns regarding OPG's proposal for safety classification using the DL approach, and the correlation between safety classification and code classification. These concerns are described in detail in subsection A.2.2.6.1 – *Safety Classification*.

However, CNSC staff have determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. OPG has committed to provide additional information regarding CNSC staff's expectations for safety classification, as outlined in Appendix D.2. Should OPG be unable to provide the necessary demonstration and resolve CNSC staff's concerns, CNSC staff would then assess whether OPG remains within its licensing basis.

2.5.2.2.6.2 Pressure Boundary Quality Group

The BWRX-300 design uses a Quality Group designation, in accordance with guidance in USNRC Regulatory Guide RG-1.26 – *Quality Group Classifications and Standards for Water, Steam, and Radioactive Waste Containing Components of Nuclear Power Plants* [R2.5-21], to establish appropriate codes and standards commensurate with the importance of the pressure-retaining function of the component. Components are classified as Quality Group, A, B, C, or D, summarised in subsection A.2.2.6.2 – *Pressure Boundary Quality Group*.

Compliance with CSA N285.0 – *General Requirements for Pressure-Retaining Systems and Components in CANDU Nuclear Power Plants* [R2.5-22] is required for all pressure-retaining systems and components of CANDU reactors in Canada. OPG has proposed compliance with N285.0 requirements but will request a variance from this standard to apply RG 1.26 code classification rules for the BWRX-300, given that the N285.0 standard contains classification rules that are specific to CANDUs.

CNSC staff reviewed OPG's proposal to use RG 1.26 rules as an alternative to CNSA N285.0 classification rules and concluded that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct given that the CNSC allows for alternative approaches to meet regulatory expectations. OPG will be required to demonstrate the implementation of alternative rules will result in an equivalent or superior level of safety in its subsequent submissions. Should OPG not be able to demonstrate this, OPG will be required to implement the existing rules. OPG is required to provide additional information to address regulatory expectations related to pressure-retaining systems and components. These commitments are captured in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

2.5.2.2.6.3 Seismic Category

The Seismic Category is intended to reflect SSC requirements both during and after a design-basis seismic event. OPG is required to provide information to demonstrate that an SSC is designed and qualified to meet seismic requirements. OPG's approach to seismic categorisation is based on the implementation of defence lines (refer to subsection A.2.2.5 – *Defence in Depth*).

CNSC staff's review and assessment of OPG's design for reliability program, as described in the PSAR and supporting documentation, is provided in subsection A.2.2.6.3 – *Seismic Category*.

CNSC staff's review of the PSAR [R2.4-1] and its supporting documentation indicates that OPG has categorised pressure-retaining structures and components (PRSC) that are Quality Group A, B, or C as Seismic Category A or B, with the exception of three components: flow elements, differential pressure measurements, and components supporting feedwater leak detection.

OPG has not classified these three component types as Seismic Category A or B, stating that their failure would not result in an adverse impact to their safety function. However, CNSC staff identified that not all SSCs with a safety function have been seismically classified, as outlined in REGDOC-2.5.2. OPG has committed to providing additional information to address this concern as outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*. CNSC staff will review OPG's submission to verify the regulatory expectations are met prior to the installation of these components.

2.5.2.2.7 Design for Reliability

CNSC staff's review and assessment of OPG's design for reliability program, as described in the PSAR and supporting documentation, is provided in subsection A.2.2.7 – *Design for Reliability*.

Subsection 4.5.3, *Design Principles and Requirements*, of REGDOC-1.1.2 includes CNSC expectations regarding how the applicant should describe the reliability design and analysis for SSCs important to safety. The application for a licence to construct should demonstrate the basis for any reliability targets that meet the design for reliability expectations of REGDOC-2.5.2 and REGDOC-2.6.1 – *Reliability Programs for Nuclear Power Plants* [R2.5-25].

Overview of CNSC Requirements for Reliability and Fitness for Service

The reliability of an SSC is the ability for that SSC to perform, in accordance with its design specifications, its required function under a set of given conditions for a defined period, or upon demand. To minimise the potential risks from operation of a nuclear power plant to a reasonable level, a plant must operate within a defined boundary set of conditions. To maintain this level of reliability, CNSC has established requirements and guidelines concerning the fitness for service of SSCs, which include activities that affect the physical condition and performance of these SSCs to ensure they remain effective over their design lifetime.

Subsection 7.6 of REGDOC-2.6.1 describes the essential elements of a reliability program, including descriptions of reliability modelling, assessments, evaluation, and monitoring. In addition, subsection 7.6 of REGDOC-2.5.2 also provides guidance for the inclusion of qualitative design considerations, such as common-cause failures, single-failure criterion, fail-safe designs, allowances for equipment outages, and considerations for the sharing of systems.

Subsection 13.3.2.3 of the PSAR [R2.4-1] addresses the fitness for service activities that affect the physical condition of SSCs to ensure they remain available to perform their intended function when required.

As the BWRX-300 relies on the use of passive safety systems to ensure the safety of the reactor, traditional reliability analysis methodologies are not suited to assess the reliability of passive safety functions. In the review of the application, CNSC staff requested OPG provide the reliability analysis methodology and results for passive safety features.

OPG stated that their proposed passive reliability analysis methodology is based primarily on the "Reliability Methods for Passive Safety Functions (RMPS)" approach, illustrated in IAEA Technical Document 1752 – *Progress in Methodologies for the Assessment of Passive Safety System Reliability in Advanced Reactors*. CNSC staff have determined that this approach is acceptable for the design of plant systems and will continue to evaluate OPG's passive safety system reliability analyses as the design progresses. Appendix D.2 – *Summary*

List of BWRX-300 Licensing Regulatory Commitments for Construction identifies this commitment.

In conclusion, CNSC staff reviewed OPG's application and its supporting documentation and determined that the application includes the design for reliability elements outlined in REGDOC-1.1.2 and REGDOC-2.6.1. However, CNSC staff identified several areas where OPG will be required to provide additional information to substantiate its proposed alternative approaches. CNSC staff will continue to review detailed SSC design information to confirm that reliability design objectives are met, as the design progresses.

2.5.2.2.8 Human Factors Engineering

CNSC staff's review and assessment of OPG's human factors engineering program, as described in the PSAR and supporting documentation, is provided in subsection A.2.2.8 – *Human Factors Engineering*.

Subsection 4.5.3 of REGDOC-1.1.2 outlines regulatory expectations for how the facility design accounts for human factors, including a description of the systematic process that has been followed to incorporate consideration of human factors into the specification, definition and analysis of requirements, design activities, and verification and validation activities. The application should also describe the interfaces of human factors in design with specific SSCs.

CNSC staff reviewed OPG's application and supporting documentation to determine if OPG has met the applicable regulatory requirements associated with Human Factors Engineering (HFE). CNSC staff are satisfied that the HFE program will identify and assess risks and consequences that arise from human interactions with the plant, and to reduce those risks as far as is reasonably achievable. The HFE program identifies and addresses these risks and consequences throughout the lifecycle of the plant.

OPG has committed to provide detailed HFE documentation as the design progresses, to demonstrate evidence that all regulatory requirements and expectations have been met. CNSC staff will review the documents to verify that the design incorporates regulatory requirements related to HFE. This commitment is also identified in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

2.5.2.2.9 Design Changes and OPEX

CNSC staff's review and assessment of OPG's design change management program is provided in subsection A.2.2.9 – *Design Changes and OPEX* .

Subsection 5.3, *Design Control Measures*, of REGDOC-2.5.2 – *Design of Reactor Facilities* outlines expectations that sufficient design controls be established to ensure the initial design, and any subsequent change or safety improvement, is carried out in accordance with the established processes and

procedures, appropriate codes and standards, and to ensure these changes address applicable requirements and design bases.

Design change control is critical for new build projects. As the design progresses from a conceptual design to detailed design and the creation of construction work packages, design changes will occur. Ensuring design changes are managed in accordance with established design change control and configuration management processes are key to ensuring the as built design is consistent with the documented safety case.

The processes for managing design changes and incorporation of Operating Experience (OPEX) are also outlined in CSA N286 – *Management System Requirements for Nuclear Facilities (2012 edition)* [R2.1-1].

In its submissions, OPG indicated that it is updating project governance documentation with its contractor partners, based on improvements to the Integrated Project Delivery model and in response to CNSC staff comments. CNSC staff will review the updated governance documentation as they become available.

The processes for managing changes to the design of the facility is described in each contract partners' respective documentation. Each partner is responsible for controlling and managing changes in their respective area of accountability. As described above, GEH manages changes to the design of the reactor, and the review of the changes, in accordance with its internal design control processes.

GEH maintains a qualification and control program for engineering software, including configuration control of related software. CNSC staff reviewed GEH's design control processes, as related to the management of changes to the design of the reactor and determined that changes to the design of the powerblock are managed in accordance with acceptable processes and procedures.

CNSC staff conclude that both OPG and GEH have adequate documentation to control, manage, assess, and evaluate changes to the design of the facility, including the consideration of relevant operating experience.

2.5.2.3 Facility Design

CNSC staff's detailed review and assessment of OPG's application and supporting documentation, related to the Facility Design specific area, is provided in subsection A.2.3 – *Facility Design* .

Subsection 4.5.4, *Facility Design*, of REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility* outlines expectations that an application describes the processes that relate to the overall adequacy of the design, including information applicable to the layout of the facility itself. The application should provide a description of the principal features and specifications of the facility.

Subsections 6.5, *Exclusion Zone*, and 6.6, *Facility Layout*, of REGDOC-2.5.2 – *Design of Reactor Facilities* also describe expectations for the design and layout of the facility structures. It is expected that the facility demonstrates consideration of the interfaces between safety, security, and safeguards provisions in various aspects of the facility's layout, including access and egress routes, minimisation of radiation exposures to workers, and the interaction of the building structure and support functions. The design of the facility is also expected to include provisions for an appropriately sized exclusion zone, based on factors such as evacuation needs, security requirements, environmental considerations, and land usage requirements.

2.5.2.3.1 Basic Technical Characteristics

In its application, OPG provided information on the basic technical characteristics of the reactor and its associated structures and systems. CNSC staff review of these structures, systems, and components (SSC) is presented throughout subsections 2.5.2.4 – *Structure Design* and 2.5.2.5 – *System Design*.

Chapter 1 of the PSAR [R2.4-1] provides an overview of the important technical parameters of the BWRX-300 reactor, summarised in subsection A.2.3.1 – *Basic Technical Characteristics* .

2.5.2.3.2 Layout of Systems and Equipment in the Facility

Subsection 4.5.4 of REGDOC-1.1.2 also states that the application should describe basic technical and schematic drawings of major facility structures, including the details of the physical location of the facility, its connections with the electrical grid, and means of access to the site by rail, road, or water.

Chapter 1 of the PSAR includes several drawings that provide an overview of the location, means of access to the site, and the interconnections with the provincial electrical grid.

Figure A-1: *Overview of the Darlington New Nuclear Site* in Appendix A provides an overview of the Darlington Nuclear site, including the relative location of the DNNP to the existing Darlington Nuclear Generating Station (DNGS).

Figure A-2 in Appendix A provides a detailed overview of the proposed single-unit deployment of the BWRX-300 reactor at the DNNP site.

Figure A-3 in Appendix A provides an overview of the layout of the proposed buildings and structures within the BWRX-300 powerblock. A discussion of the purpose and design of each of these buildings and structures is provided in subsection 2.5.2.4 – *Structure Design*.

A reactor's normal heat sink is designed to remove heat from the steam generation process to a large body of water during normal operations.

Cooling water from Lake Ontario will be delivered to an intake structure through an intake tunnel, which then is sent for collection in a Forebay. The Forebay contains circulating cooling water pumps, which will deliver the cooling water through the plant Main Condenser, before returning it to Lake Ontario through a discharge tunnel and through an outfall diffuser system. Subsection 2.5.2.4.5 – *The Normal Heat Sink and the Condenser Cooling Water (CCW) System* further describes the implementation of the condenser cooling water system for the DNNP.

2.5.2.4 Structure Design

In its application, OPG describes the preliminary design of civil structures and the role and function of each structure in the safety case for the BWRX-300 reactor. CNSC staff's detailed review and assessment of OPG's application and supporting documentation, in the Structure Design specific area, is provided in subsection A.2.4 – *Structure Design*.

Subsection 4.5.5, *Structure Design*, of REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility (version 2)* and REGDOC-2.5.2 – *Design of Reactor Facilities* describes CNSC expectations that an application for a licence to construct to provide information on the design of the site layout and on civil engineering works and structures associated with the nuclear facility.

OPG is designing civil structures for the DNNP to the expectations of the *National Building Code of Canada* [R2.5-24] and the *National Fire Code of Canada* [R2.5-33], respectively. Structures that have an importance to nuclear safety should be designed to meet the expectations of CSA N291 – *Requirements for Nuclear Safety-Related Structures* [R2.5-34], the applicable portions of the CSA N287 series of standards, as well as the CSA N289 series of standards [R2.5-35].

CNSC staff note that the information related to the design of civil structures and buildings submitted in the application is preliminary and subject to change as the design progresses. CNSC staff will verify OPG's detailed structure design for civil structures, including design specifications, models and analyses, and design reports as the design progress to ensure compliance with applicable regulatory requirements, codes, and standards. These commitments are outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

2.5.2.4.1 Reactor Building

Figure A-4 in Appendix A below shows a cut-away representation of the Reactor Building (RB) structure, highlighting the key systems, structures, and components (SSC) discussed throughout subsection 2.5.2.5 – *System Design*. CNSC staff's summary of the structure of the Reactor Building is provided in subsection A.2.4.1 – *Reactor Building* .

The RB is a Safety Category (SC) 1 (see subsection 2.5.2.2.6.1 – *Safety Classification*), Seismic Category A (see subsection 2.5.2.2.6.3 – *Seismic Category*) cylindrical structure embedded approximately 36 metres below-grade, that is placed on a circular foundation (referred to as the "basemat") that supports the Steel-Plate Concrete Composite Containment Vessel (SCCV), containment internal structures, and the RB superstructure itself. The walls of the RB and containment structures carry the vertical loads from the structure to the foundation, with lateral loads transferred to the walls by the roof, floor diaphragms, and the containment support structures.

The RB structure encloses the containment structure, which is comprised of the SCCV, the containment closure head and other metallic components, and associated internal containment structures. The portion of the RB below-grade contains the RPV, the SCCV, and other important systems and components to mitigate the impacts of external hazards (e.g., aircraft impacts, adverse weather, fires, and earthquakes). This portion of the RB also contains reactor support systems, and the SC1 power supply and associated equipment.

OPG intends to use a novel "diaphragm-plate steel composite" (DP-SC) to construct the RB, the containment structure, and the RPV pedestal. OPG stated that the DP-SC used for containment will be designed, fabricated, constructed, examined, and tested to the applicable portions of ASME BPVC Section II, Division 2 requirements, augmented by the requirements outlined in the Licensing Topical Report.

The DP-SC structures OPG will use in the construction of structures that do not form part of containment (e.g., the RB) will conform to modified criteria and requirements for the design of ANSI / American Institute of Steel Construction (AISC) N690 – *Specification for Safety-Related Steel Structures for Nuclear Facilities* (2018) Chapters NM, NN, and Appendix N9 for the design, analysis, fabrication, construction, examination, and testing of these structures.

OPG has committed that, although the CSA N287 series of standards that apply to concrete structures used in traditional construction (e.g., such as in the CANDU reactors) do not provide a complete set of requirements for DP-SC structures, applicable sections of the N287 standards will be met where practicable.

CNSC and USNRC staff witnessed the testing of steel plated concrete specimens by GEH as part of the US Department of Energy sponsored National Reactor Innovation Center Demonstration Program at Purdue University. The test confirmed aspects of the design basis while further testing is expected. Based on the information available, CNSC staff have determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. OPG is required to provide additional information regarding the design of the DP-SC structures and their suitability for the RB. CNSC staff will review the design information when submitted to verify that OPG's detailed design for integrated RB structures meets regulatory expectations, codes, and standards,

including the use of information gathered through collaboration efforts with the USNRC.

2.5.2.4.2 The Turbine Building

The Turbine Building contains the turbine-generator set, the Standby Diesel Generators (SDG), the Main Condenser, the Condensate and Feedwater systems, as well as the various turbine-generator support systems. CNSC staff's summary of the structure of the Turbine Building is provided in subsection A.2.4.2 – *The Turbine Building*. CNSC staff's discussion of these systems can be found in the following subsections:

- The Turbine-Generator is discussed in subsection A.2.5.8.2 – *Turbine-Generator System (Main Turbine Equipment)*.
- The Standby Diesel Generators and their supporting systems are discussed in subsections A.2.5.6 – *Electrical Power Systems* and A.2.5.9.4.2 – *Standby Diesel Generator (SDG) Supporting Systems*.
- The Condensate and Feedwater Systems are discussed in subsection A.2.5.8.3 – *Condensate and Feedwater Systems*.

The TB is a Safety Class 2 structure that is not seismically categorised as per the rules described in 2.5.2.2.6.3 – *Seismic Category*; however, it has been evaluated for seismic interactions to ensure that it will not compromise the structural integrity or safety functions of the Reactor Building following a design-basis earthquake or extreme tornado wind conditions.

As documented in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*, OPG will be required to provide detailed design information prior to construction of the Turbine Building.

2.5.2.4.3 The Radwaste Building

The Radwaste Building (RWB) contains equipment for the handling, processing, and packaging of liquid and solid radioactive wastes, as well as Offgas system charcoal adsorbers used for processing radioactive gases. The RWB is a Safety Class 3 building and is categorised as a RW-IIa seismic structure, in accordance with USNRC Regulatory Guide 1.143 – *Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water Cooled Nuclear Power Plants* [R2.5-23].

CNSC staff's summary of the structure of the Radwaste Building is provided in subsection A.2.4.3 – *The Radwaste Building* . CNSC staff review and discussion of the systems and processes that would take place in the RWB can be found in the following subsections:

- The Fuel Handling System, as related to the transfer of fresh and used nuclear fuel into and from the reactor, is discussed in subsection 2.5.2.5.10 – *Fuel Handling and Storage Systems*.

- The Solid and Liquid Radioactive Waste systems are discussed in subsection 2.5.2.5.11 – *Waste Treatment and Control Systems*.

As documented in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*, OPG will be required to provide detailed design information prior to construction of the Radwaste Building.

2.5.2.4.4 The Control and Reactor Auxiliary Buildings

The Control Building (CB) contains the Main Control Room, the Emergency Operations Centre, as well as various electrical, control, and instrumentation equipment. It is a Safety Class 2 structure that is non-seismic; however, has been evaluated for seismic interactions to ensure that it will not compromise the structural integrity or safety functions of the RB. CNSC staff's summary of the structure of the Control and Reactor Auxiliary Buildings is provided in subsection A.2.4.4 – *The Control and Reactor Auxiliary Buildings* .

The purpose of the RAB is to provide a dedicated space for the handling of fresh fuel, to allow for the movement of the spent fuel cask, and to provide equipment and personnel ingress and egress to the RB. The RAB is a Safety Class 2 building and is categorised as non-seismic; however, it has been evaluated for seismic interactions to ensure it will not compromise the structural integrity or safety function of the RB following a design-basis earthquake or extreme tornado.

As documented in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*, OPG will be required to provide detailed design information prior to construction of the Control and Reactor Auxiliary Buildings.

2.5.2.4.5 The Normal Heat Sink and the Condenser Cooling Water (CCW) System

Description of the Normal Heat Sink

The function of a facility's normal heat sink is to remove excess heat exhausted from the facility's turbines to a large water body. The Normal Heat Sink for the BWRX-300 facility is designed based on a once-through lake water cooling principle, which includes the Condenser Cooling Water (CCW) supporting system.

As described in subsection A.2.5.8.3 – *Condensate and Feedwater Systems* below, the BWRX-300 employs a Main Condenser system whose function is to condense the exhausted steam from the low-pressure turbine and return it to the liquid phase and, ultimately, return it to the reactor core. The Main Condenser is cooled by a separate set of piping, using water from Lake Ontario, to extract remaining heat and return this heated water back to the lake.

CNSC staff's summary of the structures associated with the Normal Heat Sink and the Condenser Cooling Water System is provided in subsection A.2.4.5 – *The Normal Heat Sink and the Condenser Cooling Water (CCW) System*.

Environmental Effects of the Construction of the CCW System

The construction of the Condenser Cooling Water (CCW) system will require in-water activities, that could affect both the surface water and aquatic environments due to creation and migration of a sediment plume from construction activities and underwater blasting. Construction activities will therefore require mitigation measures, such as the implementation of sediment nets, and authorisation under the *Fisheries Act* for any destruction of fish by means other than fishing. Underwater blasting will require compliance with guidelines and implementation of compensatory measures to minimise fish mortality under section 32 of the *Fisheries Act*.

There will be potential for fish impingement and entrainment throughout the operating life of the CCW system. OPG will be required to maintain a *Fisheries Act* authorisation and monitor losses due to fish impingement and entrainment throughout the operating life of the facility. OPG will also be required to propose, implement, and monitor offsetting measures commensurate with the observed fish losses.

CNSC staff note that CCW construction activities will be subject to environmental monitoring through the ongoing EA Monitoring and EA Follow-Up program. Additional mitigation measures may be required, should the monitoring program identify potential environmental effects, to verify that the conclusions of the EA remain valid.

2.5.2.5 System Design

Subsection 4.5.6 of REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility* outlines expectations to describe relevant systems, pressure-retaining structures, systems, and components (SSC), environmental and seismic qualification of equipment, protection against electromagnetic interference, and fire safety and fire protection systems.

CNSC staff review of the design of the specific systems of the BWRX-300 reactor facility is presented in the following subsections, and further detailed in subsection A.2.5 – *System Design*.

2.5.2.5.1 Pressure-Retaining Structures, Systems, and Components

CNSC staff's detailed review and assessment of BWRX-300 pressure-retaining SSCs is provided in subsection A.2.5.1 – *Pressure-Retaining Structures, Systems, and Components*.

The BWRX-300 design consists of a single coolant flow loop that extends from the reactor core to the turbine side and is referred to as the reactor coolant pressure boundary (RCPB).

Both the N285.0 standard [R2.5-22] and the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* [R2.5-36] (BPVC) code

establish detailed design and fabrication rules for PRSCs based on their assigned Code Classification. These codes and standards are well-established and implemented for PRSCs at existing Canadian nuclear power plants. Additionally, OPG has indicated that USNRC Regulatory Guide RG 1.26 – *Quality Group Classifications and Standards for Water-, Steam-, and Radioactive Waste-Containing Components of Nuclear Power Plants* [R2.5-21] as the basis for assigning Code Classes for BWRX-300 PRSCs.

CNSC staff have reviewed OPG's proposed implementation of N285.0, ASME BPVC, and the use of USNRC RG 1.26 for assigning Code Classifications and conclude there are no concerns with the principle of implementing RG 1.26 rules in place of CSA N285.0. However, as this would constitute a variance from the CSA N285.0 standard, CNSC staff requested OPG develop a code classification procedure. OPG has committed to submit this procedure and the proposed PRSC Code Classes for CNSC staff review and acceptance prior to the construction of the Reactor Building. This commitment is included in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

OPG has proposed the application of USNRC guidance on the "break exclusion zone" (BEZ) methodology for analysing certain postulated pipe failures. Implementation of the BEZ would eliminate consideration of the dynamic effects of a pipe break from the design basis and safety demonstration. Consequently, the implementation of the BEZ can reduce the number of pipe whip restraints and the resultant size of the containment volume. Neither REGDOC-2.5.2 nor CSA N285.0 provide guidance for the use of this methodology, therefore CNSC staff are reviewing OPG's proposal as an alternative approach to meeting regulatory requirements. Subsection 2.5.2.5.4.9 – *Break Exclusion Zone* provides more information on the BEZ methodology.

CNSC staff's review of OPG's application has noted that OPG has committed to meeting the code classification requirements for pressure-retaining systems and components as required by REGDOC-2.5.2, and in addition, will submit a request for a variance from N285.0 for CNSC staff review and approval.

As outlined in Appendix D.2, CNSC staff have identified areas which OPG is required to provide additional information to address regulatory expectations. CNSC staff will review OPG's submissions to ensure regulatory expectations have been met and that OPG has adequately demonstrated how the use of USNRC RG 1.26 as a variance to code classification rules meets the expectations of CSA N285.0.

2.5.2.5.2 Equipment Qualification

OPG has described the environmental qualification of equipment in the *Preliminary Safety Analysis Report* [R2.4-1], which has described the essential elements of an EQ program, in accordance with the requirements of CSA N290.13 – *Environmental Qualification of Equipment for Nuclear Power Plants (2018 edition)* [R2.5-38] and subsection 7.8 of REGDOC-2.5.2.

CNSC staff have concluded that OPG has demonstrated that the appropriate measures will be in place to implement an equipment EQ program that meets regulatory expectations. OPG has committed to provide required documentation throughout the detailed design phase that will demonstrate equipment requiring EQ has been designed, installed, and commissioned to met applicable regulatory expectations and standards. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* identifies a commitment for OPG to demonstrate that critical components and systems have been designed with environmental qualification considerations.

CNSC staff will review these submissions as the design progresses to ensure compliance with regulatory requirements and expectations and will conduct verification activities prior to consideration of any subsequent licensing phase.

2.5.2.5.3 Seismic Qualification

Seismic Qualification (SQ) of equipment is a process by which the ability of an SSC is verified to meet its intended design performance during and following a DBE.

SQ expectations for nuclear plants are described in CSA standard N289.1 – *General Requirements for Seismic Design and Qualification of Nuclear Power Plants* [R2.5-39], which provides both quantitative methods (e.g., testing, analysis, or a combination) as well as qualitative methods (e.g., an experience-based approach) for seismic qualification in the design. In the application, OPG states that the N289 series of standards are used to provide high-level seismic expectations to demonstrate compliance with the provisions of REGDOC-2.5.2.

The N289.1 standard requires that SSCs in CANDU-type nuclear power plants "*be designed and constructed to ensure that the effects of an earthquake do not lead to unacceptable radiation exposure.*" Though this requirement is specific to CANDU reactors, this general design principle is applicable for any type of nuclear reactor.

CNSC staff have reviewed OPG's methodology to determine its seismic classification list and categorisation of each SSC in the BWRX-300 design, as this categorisation determines the extent to which SSCs require SQ, and found that OPG will be required to provide additional information to demonstrate that, where required, SQ has been considered in the design of SSCs important to safety. As discussed in subsection 2.5.2.2.6 – *Safety Classification of Structures, Systems, and Components*, CNSC staff have identified areas where OPG will be required to provide further information as the design progresses, such as the identification of which SSCs will be seismically qualified.

2.5.2.5.4 Reactor and Reactor Coolant System

Subsection 4.5.8, *Reactor and Reactor Coolant System*, of REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility (version 2)* and REGDOC-2.5.2 outlines CNSC expectations regarding the reactor, reactor core and reactor coolant system, and means of shutdown.

CNSC staff's review of the provided information regarding the Reactor and Reactor Coolant System is outlined in the following subsections. CNSC staff's detailed review and assessment against the expectations of REGDOC-1.1.2 is provided in subsection A.2.5.4 – *Reactor and Reactor Coolant System*.

2.5.2.5.4.1 The Reactor Pressure Vessel (RPV)

CNSC staff's detailed review and assessment of the Reactor Pressure Vessel is provided in subsection A.2.5.4.1 – *The Reactor Pressure Vessel (RPV)* .

The Reactor Pressure Vessel (RPV) is a vertical, cylindrical pressure vessel used to contain the reactor core, coolant, and associated systems and components in a BWR. The RPV contains the light water coolant and moderator and forms a flow path for recirculation flow. The RPV also contains the reactor core with the nuclear fuel assemblies, saturated steam, fuel supporting structures, and the necessary reactor internals for its safe operation.

The RPV is a Safety Class 1 (see subsection 2.5.2.2.6.1 – *Safety Classification* above) pressurised vessel, designed to meet the expectations of ASME BPVC Section III, Division 1. Its purpose is to ensure the ability to function as a radioactive material barrier under normal operations, AOOs, DBA, and DEC plant states.

The RPV has integral Reactor Isolation Valves (RIV), which, among other essential functions, enable isolation of the RPV if required. Figure A-5 in Appendix A provides an illustration of the location and structure of the RIVs.

Major components in the RPV include structural and mechanical elements and core support structures:

- RPV internal structures such as the chimney head, steam separator assembly, steam dryer assembly, internal piping, the RPV head vent, and nuclear instrumentation.
- Core support structures such as the shroud support, core plates, chimney, control rod guide tubes, and control rod drive housings.

Figure A-6 in Appendix A shows a simplified representation of the RPV and associated major internal components.

2.5.2.5.4.2 Design of the Fuel System

CNSC staff's detailed review and assessment of the Fuel System design is provided in subsection A.2.5.4.2 – *Design of the Fuel System*.

Subsection 4.2 of the PSAR [R2.4-1] includes a description of the physical design of the fuel system. CNSC staff reviewed the PSAR and its supporting documentation to ensure that OPG has adequate provisions in place to meet the regulatory requirements for the design of the fuel system.

OPG has indicated that the reference fuel design for the BWRX-300 reactor will be the GE Hitachi (GEH) “Global Nuclear Fuel Mk. 2” (GNF2) reactor fuel, currently in use in the existing fleet of GEH BWRs operating worldwide.

OPG submitted bundle assembly and lattice arrangement figures in its application, and detailed drawings of subcomponents provided to CNSC staff include tie plates and spacers. Figure A-7 in Appendix A shows a diagram and three-dimensional rendering of the GNF2 fuel assembly, indicating key some of the key components described above.

CNSC staff reviewed OPG’s application and supporting documentation and leveraging the results of USNRC’s Safety Evaluation Report, have determined that the design of the fuel system complies with the relevant expectations of REGDOC-1.1.2 and REGDOC-2.5.2.

2.5.2.5.4.3 Design of Reactivity Control Systems

CNSC staff’s detailed review and assessment of the Reactivity Control system is provided in subsection A.2.5.4.3 – *Design of Reactivity Control Systems*.

Subsections 4.2.4, *Control Rods Design Evaluation*, and 4.5, *Reactor Internal Materials*, of the PSAR collectively address the physical design of reactor internal components. CNSC staff reviewed these sections of the PSAR and relevant supporting documentation to verify that the design of the control rods and reactor internal components are within regulatory expectations of REGDOC-2.5.2.

The control rods are designed to control the fission chain reaction, by providing stability and automatic control of the reactor power, and by minimising spatial instabilities in the local and regional distribution of power across the core.

The control rods are similar to designs of control rods in use in existing BWRs worldwide, in that they are cruciform shaped and reside in the gaps between fuel assemblies to perform a dual function of power shaping and control over the reactivity of the core. The power shaping function is controlled during normal operations by manipulating selected patterns of control rods. The reactivity control function requires that all control rods be available for a “reactor scram” (reactor trip), or for nominal control over the reactivity of the core.

The structure of the control rod consists of a top handle section, an absorber section, and a bottom connector. The absorber section consists of an array of stainless-steel tubes filled either with boron carbide powder, or a combination of boron carbide capsules and hafnium rods. The connector section is positioned to allow for coupling to the Control Rod Drive Mechanisms (CRDM). The movement of the control rods are restricted to the inter-assembly spaces created by adjacent fuel assemblies. There are handle pads and guide tubes in place to ensure consistent movement within this space as the rod moves into or out of the core. Figure A-8 in Appendix A shows a schematic of the control rod in used in the BWRX-300 design.

CNSC staff review of the provided analyses noted that the mechanical design demonstrates the control rods are capable of withstanding normal, abnormal, emergency, and faulted loads without permanent deformation or failure, in accordance with the expectations of REGDOC-2.5.2. The capability for insertion when required is therefore maintained.

2.5.2.5.4.4 Nuclear Design and Core Nuclear Performance

CNSC staff's detailed review and assessment of the Nuclear Core Design and Performance is provided in subsection A.2.5.4.4 – *Nuclear Design and Core Nuclear Performance*.

A detailed understanding of reactor core physics behaviour under all postulated operating conditions is essential to the design of a nuclear reactor, and to the credibility of postulated operating states and accident conditions analysed in the safety case. CNSC staff reviewed nuclear design and core nuclear performance information documented in subsection 4.3 of the PSAR [R2.4-1] as well as supporting documentation.

The reference BWRX-300 equilibrium core design was established to be a 12-month operating cycle. OPG submitted the loading pattern, the enrichment and burnable poison distributions for fresh fuel, cycle core performance summaries, and a description of shutdown margins in support of nuclear design information.

The reactor core is arranged as a vertical cylinder containing 240 GNF2 fuel assemblies, as described in subsection A.2.5.4.2 – *Design of the Fuel System*, located within the core shroud. The core is designed to have a low hydraulic resistance which is optimal for natural circulation.

The flow of coolant is upward from the base of the Reactor Pressure Vessel (RPV) through to the top where it is allowed to boil into steam. The approximate coolant inlet and outlet temperatures are 270 and 288 ^{o}C respectively, with an absolute operating pressure of 7.2 mega-Pascals (MPa). Demineralised light water is used as a material for both the moderator and reactor coolant systems.

CNSC staff note that the power and moderator temperature coefficients of reactivity may have a positive value below "hot standby" conditions (i.e., when the coolant reaches operating pressures and 260 ^{o}C, the approximate temperature at which boiling begins). OPG has committed to meeting the expectations of subsection 8.1 of REGDOC-2.5.2 by providing further detailed information for review and acceptance as the design progresses.

OPG stated in their application that design features "prevent the loss of stability margin for upset events," and that, due primarily to a large negative moderator void feedback effect, there are no observed xenon-induced instabilities in operating BWRs. However, CNSC staff note that additional information describing the results of transient and stability analyses at different operating states should be

provided as the design progresses. OPG has committed to providing further detailed information for review and acceptance as the design progresses.

CNSC staff also note that the BWRX-300 design does not include a means for "stability detection and an associated trip system." OPG will be required to confirm that a special stability detection and associated trip system will not be required for operations, prior to the removal of the first proposed regulatory hold point. OPG has committed to providing further detailed information for review and acceptance as the design progresses.

In conclusion, CNSC staff have determined that the nuclear design and core nuclear performance information provided is sufficient as supporting information for a recommendation that the Commission issue a licence to construct. Staff note that OPG has committed to provide updated analyses as the design of the reactor progresses, which CNSC staff will review to verify that regulatory expectations will be met. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* identifies these commitments.

2.5.2.5.4.5 Core Thermal-Hydraulic Design

CNSC staff's detailed review and assessment of the Core Thermal-hydraulic design is provided in subsection A.2.5.4.5 – *Core Thermal-Hydraulic Design*.

Subsections 4.4.8 and 4.8 of the PSAR [R2.4-1] describe the core thermal-hydraulic stability performance requirements.

The thermal-hydraulic design of the BWRX-300 is based on the Economic Simplified BWR (ESBWR), a 1520 MWe reactor design currently certified by the USNRC. While the ESBWR has never been built, it did have a significant testing and qualification program that is mostly applicable to the BWRX-300. During normal operation, core cooling is achieved based on natural circulation, supported by the extended height of the RPV and the "chimney" space located above the reactor core.

The BWRX-300 has several novel features compared that are intended to simplify the design, and that have a consequential impact on the general thermal-hydraulic and core design. Some of these features include the use of Reactor Isolation Valves (RIV) to rapidly isolate a ruptured pipe, the elimination of safety relief valves, and the use of the Isolation Condenser System (ICS) to provide overpressure protection and passive core cooling during transients and postulated accident events.

CNSC staff's detailed discussion of the functionality of the ICS is described in subsections 2.5.2.5.5.2 and A.2.5.5.2 – *The Isolation Condenser System as a System Supporting the Emergency Core Cooling Function* .

The thermal-hydraulic design methodology for the BWRX-300 is based on several computer codes, including the Transient Reactor Analysis Code "GE Hitachi" (TRACG) computer code that has a substantial contribution to the demonstration of

the safety of the design. These computer codes should meet the expectations outlined in REGDOC-2.4.1, REGDOC-2.5.2, as well as CSA standard N286.7 – *Quality Assurance of Analytical, Scientific, and Design Computer Programs* [R2.4-36].

The TRACG code is used to determine the void fraction distribution, the core pressure drop, and the hydraulic load, all of which are documented in the *TRACG Application for BWRX-300* document [R2.4-37]. CNSC staff's review of the supplied documentation regarding the validation and qualification of thermal-hydraulic computer codes is described in subsection 2.4.2.3.4.1 – *Transient Reactor Analysis Code "GE Hitachi" (TRACG)* above.

CNSC staff have determined that OPG has provided sufficient information to support a recommendation for the Commission to issue a licence to construct.

2.5.2.5.4.6 Reactor Materials

CNSC staff's detailed review and assessment of reactor materials, as described in the PSAR and its supporting documentation, is provided in subsection A.2.5.4.6 – *Reactor Materials*.

Subsection 5.2 of the PSAR [R2.4-1] provides a summary of the material requirements associated with the BWRX-300 Nuclear Boiler System (NBS), as well as those associated with the reactor coolant pressure boundary (RCPB).

The NBS uses well-proven BWR materials and processes that have been refined to meet BWRX-300 design-specific requirements. The basic design principle for material selection is to select materials that can maintain reliable operation of plant systems and components throughout the design life of those systems or components. Carbon steels, atmospheric corrosion-resistant carbon steels, and low-alloy steels are used as basic materials. To minimise the potential for corrosion product formation and the consequential radiation fields from corrosion product transport, austenitic stainless steels are used.

All pressure boundary material specifications for the BWRX-300 are defined in the PSAR as ASME or the American Society for Testing and Materials (ASTM) standards. The PSAR also provides a discussion of other degradation mechanisms that have the potential to affect the integrity of materials used in the BWRX-300 reactor.

CNSC staff reviewed the material specifications and process controls provided in the PSAR and its various supporting documents and have determined that the regulatory expectations in REGDOC-1.1.2 and REGDOC-2.5.2 have been met.

2.5.2.5.4.7 Design of the Reactor Coolant and Reactor Auxiliary Systems

CNSC staff's detailed review and assessment of the Reactor Coolant and Auxiliary systems is provided in subsection A.2.5.4.7 – *Design of the Reactor Coolant and Reactor Auxiliary Systems*.

Chapter 5 of the PSAR provides a description of the Reactor Coolant System (RCS). Subsection A.2.5.4.1 – *The Reactor Pressure Vessel (RPV)* and Figure A-6 below provide a description and illustration of the internals of the BWRX-300 RPV.

The BWRX-300 is designed to operate in a direct thermodynamic cycle, directly connecting steam generation in the reactor to the turbine. Similar to operating BWRs, the reactor coolant water has a dual function, acting as a coolant and working fluid that drives the turbine, with the exception that the BWRX-300 does not require a recirculation pump and associated piping.

The Reactor Coolant System (RCS) is defined as the system necessary to provide and maintain adequate core cooling conditions (i.e., coolant pressure, temperature, and flow rate) for the fuel during power operation. The system includes the RPV, the main steam lines (MSL), as well as feedwater lines up to and including the outermost Containment Isolation Valves (CIV).

The RCS and NBS implement inherent margins (e.g., a larger inventory of water) to eliminate system challenges and reduce the number and size of RPV nozzles, as compared to predecessor BWR designs. Notably, all RPV nozzles are located above the "top of active fuel" region. The relatively large RPV volume, along with the height of the chimney region, provides a substantial reservoir of water above the core, ensuring that the coolant level is maintained above the top of the fuel. This ensures that fuel cladding temperatures are maintained within acceptable operating temperature range following transients involving interruption of feedwater flow or loss-of-coolant accidents (LOCA).

CNSC staff have reviewed of OPG's application and supporting documentation and has determined that the information is sufficient to support a recommendation for the Commission to issue a licence to construct, as related to the general design expectations of the reactor coolant system identified in REGDOC-2.5.2. However, CNSC staff have also identified some areas where OPG is required to provide additional detailed information as the design progresses to demonstrate REGDOC-2.5.2 expectations have been met. Subsections A.2.2.6.2 and 2.5.2.2.6.2 – *Pressure Boundary Quality Group* provides an overview of some of these areas.

2.5.2.5.4.8 Overpressure Protection

Protection of components and systems from overpressure conditions and consequential failure is an essential design requirement for pressure-retaining systems or components (PRSC).

The overpressure protection design concept for the BWRX-300 RCPB is based on the use of the Isolation Condenser System (ICS) which also provides for reactor shutoff, and fuel cooling functionality. OPG's application states that the large capacity of the ICS is sufficient to provide overpressure protection and maintain the RPV pressure within a nominal acceptable range, in accordance with ASME *Boiler and Pressure Vessel Code* Section III Class 1 equipment.

The BWRX-300 reactor does not implement PRVs, but rather implements an ultimate pressure regulation (UPR) device on each ICS line that provides a DL4b function and is intended to operate in the event of a failure of all ICS trains. OPG states that the UPR device effectively eliminates the potential for a loss of coolant accident (LOCA) resulting from a PRV failure.

OPG has stated that the ICS will be designed for all relevant loads. This will then ensure that it can provide the overpressure protection function without compromising the BWRX-300 pressure boundary in the event of system actuation.

OPG has committed to provide CNSC staff with comprehensive design documentation and relevant documents demonstrating the functionality, capacity, and structural integrity of the ICS, including critical SSCs used for overpressure protection, such as the RPV, ICS, in-line Reactor Isolation Valves (RIV), and IC return valves. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* identifies the commitment for OPG to provide detailed information regarding the capability of the ICS to perform overpressure protection functions, and provide additional piping analysis reports.

2.5.2.5.4.9 Break Exclusion Zone

CNSC staff's detailed review and assessment of OPG's implementation of the Brek Exclusion Zone (BEZ) is provided in subsection A.2.5.4.9 – *Break Exclusion Zone*.

The BEZ is a methodology for assessment of pipe breaks in a RCPB without having to explicitly evaluate dynamic effects of postulated breaks in high-energy lines (HEL)—i.e., consequences such as pipe whip, jet impingement, blast effects—and their effects on neighbouring systems and equipment important to safety. The BEZ is also used as a methodology to justify limited implementation of physical preventative and mitigation measures to protect against dynamic HEL break effects—such as pipe whip restraints, guards, barriers, and shielding.

The BEZ concept has been applied to limited sections of HEL piping near containment penetrations in a number of US nuclear power plants, and typically where it is impossible to perform in-service inspections to verify piping conditions due to access restrictions or high radiation fields.

OPG has proposed the application of USNRC guidance on the BEZ for such postulated pipe failures. CNSC staff note that the BEZ concept is not addressed in Canadian nuclear regulatory framework and is not a standard practice in the Canadian nuclear industry.

OPG is proposing to use the BEZ approach with the BWRX-300 on a larger scale than previously implemented in operating BWRs and Pressurised Water Reactors (PWRs). OPG's proposal includes applying BEZ principles to include all HEL inside the reactor building, consisting of a total of approximately 300 metres of piping, significantly more than the current implementation in operating BWRs and PWRs.

CNSC staff's review of OPG's proposal determined that OPG has not adequately demonstrated the effectiveness of the stress and cumulative usage factor-based screening processes to anticipate crack initiation and growth under the BEZ methodology.

Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* includes a commitment for OPG to provide further detailed information related to the BEZ. Should CNSC staff not agree with the extent to which OPG has proposed to implement BEZ, OPG will be required to propose an alternative approach to meet applicable CNSC regulatory expectations for HELs.

2.5.2.5.5 Safety Systems and Safety Support Systems

The following subsections provide an overview of, and provide CNSC staff's review and assessment of, the safety and safety support systems of the BWRX-300 reactor. CNSC staff's detailed review and assessment of the BWR-300 safety support systems are provided in subsection A.2.5.5 – *Safety Systems and Safety Support Systems*.

2.5.2.5.5.1 Means of Shutdown

Ensuring adequate means of shutdown is integral to nuclear safety. An application for a licence to construct should describe the means of reactor shutdown, means of reducing the reactor power to a low value, and of maintaining that low power for the required duration when the reactor power control system and inherent characteristics are insufficient or incapable of maintaining reactor power within the safe operating envelope.

Subsection 8.4, *Means of Shutdown*, of REGDOC-2.5.2 outlines expectations for the design of a shutdown system, including specifying provisions for separate, independent, and diverse means of shutting down the reactor. At least one of these means is expected to be independently capable of rendering the reactor subcritical from normal operation, by an adequate margin, assuming a single failure.

Chapters 4, *Reactor*, and 7, *Instrumentation and Control*, of the PSAR describe the design of the BWRX-300 means of shutdown. The reactor shutdown function is fulfilled by a reactivity control system that serves the combined function of (1) controlling reactivity (i.e., controlling the reactor power), and (2) shutting down the reactor and maintaining the core subcritical. The reactivity control systems consist primarily of the Control Rods (CR) and the associated Control Rod Drive (CRD) system (refer to Figure A-7 for a diagram of the fuel assembly and the location of the CRs). Subsection A.2.5.4.3 – *Design of Reactivity Control Systems* provides a description of the CRs.

For events that demand a rapid shutdown of the reactor, CRs are inserted rapidly using stored high-pressure water hydraulic means (referred to as a "hydraulic SCRAM" or "hydraulic trip"). In the event the hydraulic trip has failed, electric motors are signaled to run-in the CRs at a fast speed (referred to as "fast motor run-in") as a backup system.

OPG has stated that these means—i.e., the hydraulic drive-in and the fast motor run-in of the CRs—meets the two independent means shutdown expectations of REGDOC-2.5.2. CNSC staff reviewed the design information provided to support OPG's claims, and determined there is adequate separation and independence for the *ex*-core components, including the sensors for shutdown need, motive force, and CR actuation. However, CNSC staff do not consider these means truly independent since they share the only credited negative reactivity insertion devices.

OPG has provided CNSC staff with supplemental submissions to address CNSC staff comments, providing a technical rationale to demonstrate the means of shutdown implemented with the BWRX-300 design constitutes an acceptable "alternative approach," as provided for in section 11 of REGDOC-2.5.2.

CNSC staff will conduct a detailed review of the supplemental information, the safety analyses presented in the PSAR, and the commitment to provide the BDBA and reliability analyses, to verify that events with a complete failure-to-insert of all control rods will not lead to unacceptable consequences. Should OPG be unable to demonstrate that its means of shutdown meets the nuclear safety expectations in REGDOC-2.5.2, OPG will be required to propose additional design provisions to meet CNSC regulatory expectations.

CNSC staff concluded that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. However, OPG will also be required to provide further detailed submissions as the design progresses addressing CNSC staff's comments on the means of shutdown. These commitments are included in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

2.5.2.5.5.2 The Isolation Condenser System as a System Supporting the Emergency Core Cooling Function

Chapter 6, *Engineered Safety Features*, of the PSAR [R2.4-1] describes the features of the BWRX-300 that are intended to mitigate the consequences of AOOs or postulated DBAs without leading to core damage.

CNSC staff's detailed review and assessment of the Isolation Condenser System is provided in subsection A.2.5.5.2 – *The Isolation Condenser System as a System Supporting the Emergency Core Cooling Function*.

2.5.2.5.5.2.1 Description of the Isolation Condenser System

OPG states that the BWRX-300 design includes several features that simplify the design and enhance the overall safety of the plant. In particular, the BWRX-300 design employs the use of the passive Isolation Condenser System (ICS) to perform the emergency core cooling (ECC) safety function.

Subsection 6.2.1 of the PSAR states that the ICS is designed as a DL3, Safety Class 1, system that removes decay heat following a reactor isolation and shutdown event when the main condenser is not available.

The ICS consists of three independent, redundant, loops each connected to the RPV by steam supply and condensate return piping. Each loop contains an ICS pool located outside of containment, a heat exchanger, and associated connections to the RPV. Figure A-9 in Appendix A shows the approximate layout of the ICS system in relation to the RPV within the BWRX-300 reactor building.

During normal operating conditions, the ICS is in standby and is available to perform the intended safety function. In any of the reactor shutdown states, the ICS is intended to provide a suction path from the internal chimney region to the Shutdown Cooling system (SDC) to provide for the DL2 decay heat removal function. When SDC is not operating, the interfacing valves between SDC and the ICS are isolated to maintain the integrity of the reactor coolant pressure boundary.

The ICS also provides essential overpressure protection and core inventory make-up functions in response to Anticipated Operational Occurrences (AOO) or Design-Basis Accident (DBA) events. In response to either of these events, the ICS is intended to confine radioactive materials, maintain fuel cooling, and provide long-term heat removal.

The isolation condensers in each loop condense steam from the RPV and transfer heat to the bulk ICS pool water, which is allowed to boil, and any steam from the ICS pools is vented to atmosphere. The normal condition for the ICS is for the steam-side connection between the RPV and each isolation condenser to remain open, with the condensate return line normally closed.

Upon an actuation signal, the ICS is placed into operation by opening the condensate return valves, where this subcooled water enters the RPV chimney and lowers the pressure at the reactor core exit. Steam from the RPV continues to enter the isolation condensers where the condensation cycle continues, and subcooled liquid is returned to the RPV in a continuous cycle.

2.5.2.5.5.2.2 The Function of the Isolation Condenser System (ICS) as an Alternative to Emergency Core Cooling Systems (ECC)

OPG states that the proposed BWRX-300 design has simplified the design of systems and components that support the ECC safety function. The BWRX-300 design for mitigating loss-of-coolant accidents (LOCA) includes crediting conservative safety margins, designing for incorporation of larger water volumes by including a taller chimney region, and reducing the number and size of RPV penetrations as compared to previous BWR designs. The BWRX-300 also places its feedwater and ICS condensate return valves above the top of active fuel region.

The reactor isolation valves (RIV) also provide a critical function in response to a LOCA event, by acting with the ICS in a LOCA event to preserve coolant inventory and ensure that adequate core cooling is maintained. In the PSAR, OPG states that due to the large inventory of water and the tall chimney region, the rate of pressurisation of the RPV is slower than the time needed for the RIVs and ICS system to actuate. In combination with the hydraulic reactor trip, the slower RPV

pressurisation rate and actuation of the ICS means that relief and safety valves for pipe breaks are not required. However, CNSC staff note that the design of the ICS has matured to now include ultimate pressure regulation (UPR) devices on each of the three-isolation condenser steam supply lines, set to open and relieve accumulated steam pressure at different setpoints.

Subsection 15.2 of the PSAR describes the bounding scenarios for a LOCA event from pipe breaks as being either a large or small break inside or outside of containment. A large pipe break is assumed to be a break in a piping line with the largest postulated breaks occurring in the main steam, feedwater, or ICS supply lines. Each of these lines have RIVs which are designed to close within 5 seconds following receipt of a close signal.

For large break LOCAs, the RIVs are intended to close rapidly to prevent any significant loss of coolant inventory. The ICS is intended to actuate following RPV isolation, with the ICS pools having capacity to remove decay heat, depressurise the RPV and maintain the pressure within acceptable ranges, and maintain fuel cooling for an estimated 72 hours.

Large steam pipe breaks are postulated to occur in either the main steam or ICS steam supply piping trains. For such breaks occurring inside of containment, a reactor trip is initiated on high containment pressure, whereas for such breaks occurring outside of containment, a reactor trip occurs on detection of a pipe break. The MSRIVs will close on either a high containment pressure signal or pipe break detection signal, and the ICS RIVs for the given train will close when an ICS break inside or outside containment is detected. In subsection 15.2 of the PSAR, OPG states that since these RIVs close rapidly there is little effect on the availability of any of the isolation condensers for postulated large breaks. Following RPV isolation, a single ICS train is credited to provide sufficient flow and inventory to remove decay heat and depressurise the RPV.

The ICS does not require external source of power or operator action to actuate. In response to AOO or DBA events, the ICS acts to confine any potential releases of radioactive materials through maintaining overpressure protection functionality and maintaining the integrity of the RCPB. It also supports long-term fuel cooling and heat removal in these scenarios.

As documented in Chapter 3 of the PSAR, the ICS and its supporting systems are classified as Safety Classification (SC) 1 (refer to subsection 2.5.2.2.6.1 – *Safety Classification* above), with some principal components classed as SC3.

CNSC staff reviewed the information provided in the PSAR and supporting documentation and determined that OPG will be required to provide additional information as the design progresses, to support some of the statements related to the reliability and RIV response times. This commitment is outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for*

Construction. This commitment is related to RHP-2: Installation of the Reactor Pressure Vessel.

2.5.2.5.5.2.3 Effects on the Reactor Pressure Vessel upon Actuation of the Isolation Condenser System

A sudden opening of the ICS condensate return valve can lead to condensation of a large volume of steam, allowing pressure to be reduced in the RPV as intended. However, this condensation also allows for the potential for steam hammer to be induced should the ICS system not adequately account for it in the design.

CNSC staff requested OPG demonstrate that fluid hammer is precluded when the ICS is activated, to ensure that the pressure boundary will not be breached. OPG indicated that the ICS is designed for all relevant loads, and committed to provide a detailed analysis, which considers fluid hammer, in a system piping design report that demonstrates allowable limits are not exceeded.

Additionally, BWRX-300 condensate return valves are nominally closed and ready to open when the ICS is activated on an on-demand signal from any of the interfacing control systems. CNSC staff requested OPG demonstrate the adequacy of the performance of the condensate return valves. OPG stated that further design details on these parameters will be provided as the design progresses.

OPG will be required to provide further detailed design information demonstrating the design adequacy of the condensate return valves. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* also identifies this commitment. CNSC staff will review OPG's submission to confirm that the design and functionality of the condensate return values are adequate to ensure the safety of the reactor.

Capacity of the Isolation Condenser System to Provide Overpressure Protection

Through the ICS, the BWRX-300 reactor does not require additional systems to provide protection from overpressure conditions. Unlike traditional BWRs, the BWRX-300 does not discharge reactor coolant in response to a postulated pressure increase event—instead, condensed steam returns to the RPV by means of natural circulation.

CNSC staff requested OPG demonstrate that the relief capacity of the ICS is sufficient under all postulated accident scenarios by providing the overpressure protection testing results for the BWRX-300. CNSC staff will review the commissioning and test plan for the ICS as the information becomes available. Appendix D.2 outlines OPG's commitment to provide detailed documentation to ensure the ICS will effectively carry out its intended overpressure and ECCS safety functions.

In conclusion, CNSC staff determined that while the information provided is adequate for this stage of the design, OPG will be required to provide additional

detailed information which CNSC staff will review to ensure overpressure protection is implemented in accordance with the expectations of REGDOC-2.5.2 – *Design of Reactor Facilities* as the design progresses.

2.5.2.5.5.3 Systems and Components Supporting Emergency Heat Removal

As outlined in subsection 8.8, *Emergency Heat Removal System*, of REGDOC-2.5.2, an application for a licence to construct should describe the systems and components that support emergency heat removal to ensure safety under abnormal conditions. CNSC staff's detailed review and assessment of systems supporting emergency heat removal functions are provided in subsection A.2.5.5.3 – *Systems and Components Supporting Emergency Heat Removal*.

The design shall include an emergency heat removal system that provides sufficient removal of residual heat to meet fuel design limits and maintain reactor coolant pressure boundary condition limits. The design should also include provisions to ensure it meets expectations outlined in CSA standard N290.11 – *Reactor Heat Removal Capability during Outages of Nuclear Power Plants* [R2.5-43].

The BWRX-300 incorporates a Passive Containment Cooling System (PCCS), which is intended to remove any heat, de-pressurise, and maintain containment within its pressure limits for design-basis events such as a LOCA. Subsection 2.5.2.5.5.4 – *Structures, Systems, and Components Supporting Containment and Confinement* provides an overview of SSCs supporting the containment function, including the PCCS.

The PCCS transfers heat from containment structures to the reactor cavity and equipment pools to maintain containment pressures and temperatures within design limits during accident conditions or during a loss of active containment cooling. The containment depressurisation and heat removal functions are passive and do not require on-site or off-site electric power for operation.

Chapter 15 of the PSAR [R2.4-1] provides an overview of post-accident energy removal capabilities using the PCCS. OPG presented an assessment methodology report, documented in OPG document NK054-REP-03555-00001 – *BWRX-300 Containment Evaluation Method* [R2.5-43], which was jointly reviewed by CNSC staff and the USNRC under the Memorandum of Cooperation. OPG will be required to provide additional information to support regulatory actions documented in the report. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* includes a commitment for OPG to provide further information to address topics discussed in this report.

In conclusion, CNSC staff have reviewed OPG's application, and its supporting documentation related to emergency heat removal and determined that the information provided is sufficient to support a recommendation that the Commission issue a licence to construct. CNSC staff note that further detailed analysis on the performance of the PCCS is required and will be submitted for

review as the design progresses. The results of these detailed analyses will be provided as the information becomes available.

2.5.2.5.5.4 Structures, Systems, and Components Supporting Containment and Confinement

Subsection 6.3, *Containment and Associated Systems*, of the PSAR describes the SSCs that support containment and confinement functions.

The BWRX-300 Containment structure consists of the Primary Containment System (PCS), which is intended to form a leak-tight boundary encompassing the RPV, associated piping, and the Reactor Isolation Valves (RIV). It is intended to function as the fourth physical barrier to fission product release and can also be flooded in response to beyond design-basis accident (BDBA) scenarios.

The Containment structure is constructed using steel-plate concrete composite structures and is intended to operate active and passive cooling systems to dissipate normal and abnormal heat loads. It is embedded below-grade within Reactor Building and arranged such that it is below the pools for the ICS, reactor cavity, and equipment areas. Figure A-10 in Appendix A below shows the general layout and arrangement of the PCS and associated structure within the BWRX-300 reactor building.

The Containment structure itself is described as a Steel-Plate Composite Concrete Containment Vessel (SCCV) with cylindrical wall, basemat, top slab, and a containment closure head. The containment closure head is a removable steel dome which functions as a portion of the upper containment boundary. The closure head forms part of the base of the reactor cavity pool and helps maintain water above the PCS during normal operation.

The PCS is designed to be operated as a passive system, with the Containment Inerting System providing an inert nitrogen environment slightly above atmospheric pressure. Containment pressure and temperature readings are continuously monitored with alert indications provided at defined setpoints.

The reactor cavity is intended to be used as a heat sink for long-term cooling in abnormal or design-basis accident conditions if the normal Containment Cooling System coolers are unavailable (see subsection 2.5.2.5.5.4.1 – *The Containment Cooling System (CCS)*). Heat transfer from containment occurs passively by means of natural convection and condensation to the subcooled water in the equipment pool.

OPG has committed to provide additional information regarding the Primary Containment System and its associated subsystems as the design progresses, as outlined Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*. These commitments are related to both RHP-1: Installation of the Reactor Building foundation, and RHP-2: Installation of the Reactor Pressure Vessel.

2.5.2.5.5.4.1 The Containment Cooling System (CCS)

Subsection 9A.5.6 of the PSAR provides an overview of the intended function of the Containment Cooling System (CCS). The CCS is a DL2, Safety Class 3, closed-loop system intended to recirculate the atmosphere in the PCS to remove heat, with no outside air introduced into the system. The CCS is also used to ensure containment conditions are maintained, including maintaining temperatures within specified limits for environmentally qualified Safety-Category function equipment.

The CCS provides cooling using four (4) fifty-percent duty air-handling units that reject heat to the Chilled Water Equipment system during all plant operational states (see subsection A.2.5.9.1.4 – *Chilled Water Equipment (CWE) System*).

During normal operation, a single CCS train is operating with the other placed in the standby condition to ensure that environmentally qualified equipment in containment can carry out their required safety function. The standby train automatically operates if the containment temperature reaches the upper setpoint limit or should the primary train trip.

During abnormal operations, including during a loss-of-offsite power, the CCS air-handling units and supporting equipment remain functional, with electrical power provided by the Standby Diesel Generators. The CCS also helps cool containment following a loss-of-offsite-power event when the plant transitions from hot to cold shutdown states.

2.5.2.5.5.4.2 The Passive Containment Cooling System (PCCS)

Subsection 6.3.3 of the PSAR provides a description of the Passive Containment Cooling System (PCCS). The PCCS is intended to augment the primary CCS and maintain pressure and temperature of the PCS during abnormal conditions, where the CCS fan coolers are unavailable. The PCCS transfers heat to the equipment pool above containment by means of natural convection and thermosyphon principles, through three independent trains of PCCS piping. Figure A-11 below shows a representation of the PCCS piping, shown in purple colouring, in relation to the RPV and its connections to the equipment pool.

The PCCS is always in-service and requires no signals or operator action to actuate. However, heat removal from containment during normal operation is provided by the CCS through the active cooling fans of that system.

Heat removal from containment through the PCCS occurs when steam is discharged into containment following a design-basis event such as a pipe break, and condensation heat transfer from containment to the PCCS rejects the heat to the subcooled liquid in the reactor cavity and equipment pool.

In the PSAR, OPG states that the amount of heat discharged into containment following a large pipe break is minimal, since the RIVs can rapidly isolate the RPV. OPG states that the PCCS is sized with sufficient capacity to reduce pressure and temperature in containment below design limits and minimise leakage

following an accident. Much of the heat in a LOCA event is removed from the RPV through the ICS, and the PCCS is only required to remove the heat discharged into the containment.

In conclusion, CNSC staff have reviewed OPG's application, and its supporting documentation related to PCCS, and determined that the information provided is sufficient to support a recommendation for the Commission to issue a licence to construct.

2.5.2.5.5.4.3 Containment Isolation

CNSC staff's detailed review and assessment of containment isolation provisions is provided in subsection A.2.5.5.4.3 – *Containment Isolation*.

Containment Isolation Valves (CIV) are safety-classified valves that prevent uncontrolled releases of containment content in the event of an accident or other postulated conditions, by maintaining the integrity of the containment boundary. Piping systems that penetrate primary containment structures are provided with detection, isolation, and containment functions that are reliable and redundant.

Containment isolation is required to maintain the integrity of the containment structure and act as a physical barrier to protect against the uncontrolled release of radioactive materials to the environment because of an accident. Several systems are located inside of containment that have in-line RIVs, and OPG's safety analysis assumes that the RIVs quickly isolate any large pipe break, preserving reactor coolant and therefore minimising any release of radioactive materials into containment.

OPG has proposed an alternative approach to meet the expectations of subsection 8.6.6, *Containment Isolation*, of REGDOC-2.5.2. This subsection requires that "*Each line of the reactor coolant pressure boundary that penetrates the containment, or that is connected directly to the containment atmosphere, shall be automatically and reliably sealed*." OPG has provided a rationale to support this request and committed to provide future submissions addressing CNSC staff's comments on the proposed alternative approach to Containment isolation. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* includes this commitment.

Each system line that penetrates containment has dual redundant in-line CIVs that automatically close during accident scenarios, minimising any potential release path for fission products outside of containment.

Penetration sleeves are used in the BWRX-300 design for high-energy lines (HELs) that penetrate containment, to reduce the effects of high temperatures or pressures on the containment concrete. Figure A-12 provides a representative illustration of sleeves for HELs penetrating containment.

CNSC staff reviewed OPG's PSAR and supporting documentation as it relates to containment penetrations and have determined the information provided is sufficient to support a recommendation for the Commission to issue a licence to construct. However, OPG is required to provide further additional information as the design progresses to ensure compliance with the expectations of REGDOC-2.5.2.

Leakage rate testing of containment structures and components is performed to ensure leakage through containment and SSCs penetrating containment do not exceed allowable leakage rates. Testing measures the rate at which a contained air mass escapes through the containment boundary, at a specific pressure.

OPG has also committed to provide further detailed information to address CNSC staff's comments in updated Containment design pressure and leak rate documentation. This commitment is included in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

2.5.2.5.5.4.4 Containment Inerting System and Overpressure Protection

The Containment Inerting System (CIS) is intended to preclude the combustion of hydrogen and prevent consequential damage to essential equipment and SSCs. It establishes and maintains an inert atmosphere with less than 4% dry-basis-percent oxygen within containment during plant operating modes, except during refuelling or maintenance outages and for limited periods of time for inspection during low-power operation. The CIS also maintains a slightly positive pressure environment in containment to prevent air in-leakage from the Reactor Building.

The CIS is also intended to provide overpressure protection in beyond design-basis event scenarios. CNSC staff note that an ultimate assessment of the performance of containment structures is not available at this stage of BWRX-300 design.

Control of Combustible Gases

Control of combustible gases is not required at the start of a potential accident sequence due to the existing inert atmosphere. Generation of excess hydrogen could occur if a severe accident occurs; however, oxygen present during a severe accident alone is insufficient to create a combustible containment atmosphere.

The ICS includes an autocatalytic recombination device intended to remove non-condensable gases, to ensure that combustible concentrations of hydrogen and oxygen do not develop.

2.5.2.5.6 Electrical Power Systems

Chapter 8 of the PSAR [R2.4-1] provides a description of each of the electrical distribution systems. OPG states that the electrical distribution system for the BWRX-300 is an integrated system, consisting of Safety Class 1, Safety Class 2, Safety Class 3, and non-Safety Class components.

The PSAR states that normal plant power is provided by either the main generator or from off-site power, with backup power provided by Standby Diesel Generators (SDG), and Safety Class 1 emergency power provided by uninterruptible power supplies, designed with sufficient capacity for equipment to perform any of their intended fundamental safety functions. Electrical power is required for monitoring, control, alarms, and communications for any design basis or beyond design basis accident and is accomplished by using a combination of safety-classified electrical distribution components and SDGs, as explained below.

OPG states that the Safety Class 1 electrical power system is designed to provide 72 hours of alternating (AC) and direct (DC) current, supported by the SDGs for a week following this initial 72-hour period, and with potential connections for external generators. OPG states that the capacity of this system has been designed to be able to support the continuity of fundamental safety functions until long-term electrical service is re-established, without the need for operator action to connect temporary services for at least eight (8) hours and without need for off-site services for at least 72 hours.

Based on a review of the information provided in the PSAR and supporting documentation, CNSC staff found that OPG has committed to meet the electrical distribution system expectations of subsection 7.10 of REGDOC-2.5.2. OPG has committed to submit additional detailed design information throughout the design and implementation phase to demonstrate that the electrical distribution system will meet all applicable regulatory expectations. CNSC staff will review this information and conduct verification activities prior to a subsequent licence application, should the Commission issue a licence to construct. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* identifies this commitment.

2.5.2.5.7 Instrumentation and Control

Chapter 7, *Instrumentation and Control*, of the PSAR describes the overall BWRX-300 I&C system and supporting systems, also known as the Distributed Control and Information System (DCIS). The integrated DCIS is subdivided into several systems serving several defence line functions and with several safety classifications, each having independence and diversity requirements.

CNSC staff's detailed review and assessment of the BWRX-300 DCIS is provided in subsection A.2.5.7 – *Instrumentation and Control*.

DCIS Safety Class 1 functions are implemented in three divisions of the DL3 "C10" digital I&C platforms, each located in separate divisional, fire-barriered, rooms in the reactor building.

Safety Class 2 and 3 functions are implemented in "C20" I&C platforms corresponding to DL4a and DL2 functions. The DL4a functions are implemented in a digital platform with 2-of-3 voting logic and is in a separate fire-barriered room in the Control Building (CB). The DL4a digital platform is diverse from the DL3

"C10" digital platform. DL 2 functions are implemented in hardware and software platforms located in separate, fire-barriered, rooms in the CB.

Non-safety class functions are associated with power generation systems and plant support systems. Non-safety related functions are implemented in "C30" I&C platforms located in a separate, fire-barriered, room in the CB.

CNSC staff reviewed OPG's application and supporting documentation related to I&C, and determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. However, during the review, CNSC staff identified three technical items that require further consideration. These technical items are discussed in detail in subsection A.2.5.7 – *Instrumentation and Control*.

OPG has committed to submit additional detailed design information to demonstrate that the I&C systems will meet all applicable regulatory requirements and expectations. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* identifies these commitments. These commitments are related to RHP-1: Installation of the Reactor Building foundation.

2.5.2.5.8 Steam Supply System

Subsections 4.5.13, *Steam Supply System*, of REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility* states an application for a licence to construct should provide design information related to the steam supply system, including the main steam lines, steam and feedwater system piping and vessels, and turbine generators. Subsection 8.3, *Steam Supply Systems*, of REGDOC-2.5.2 – *Design of Nuclear Facilities (version 1)* provides further expectations for each of the main components of the steam supply system.

CNSC staff reviewed the Steam Supply System described in the PSAR [R2.4-1] and relevant System Design Description (SDD) documentation, flowsheets, and flow diagrams that were available.

Chapter 10, *Steam and Power Conversion Systems*, of the PSAR describes the BWRX-300 steam supply system, alternatively known as the Steam and Power Conversion System. This system includes the following subsystems:

- Turbine Generator System (also known as "Main Turbine Equipment") (see subsection A.2.5.8.2 – *Turbine-Generator System (Main Turbine Equipment)*).
- Condensate and Feedwater Systems (see subsection A.2.5.8.3 – *Condensate and Feedwater Systems*).
- Main Steam Systems (see subsection A.2.5.8.3.1 – *Main Steam System*).
- Main Condenser and Auxiliaries System (see subsection A.2.5.8.3.2 – *Main Condenser and Auxiliaries System*).

- Moisture Separator Reheaters (see subsection A.2.5.8.3.3 – *Moisture Separator and Reheaters*).
- Turbine Auxiliary Systems (see subsection A.2.5.8.3.4 – *Turbine Auxiliary System*).
- Circulating Water System (see subsection A.2.5.9.1.1 – *The Circulating Water System*).
- Generator Exciter System (see subsection A.2.5.8.3.5 – *Generator Exciter System*).

CNSC staff's detailed review and assessment of the Steam Supply System and its associated subsystems are provided in the subsections referenced above.

CNSC staff found that the documentation supplied for each of these systems provided a high-level explanation of the system design and functional requirements. The documentation incorporates references to appropriate CNSC regulations, regulatory documents, and external standards; however, CNSC staff found that OPG is required to provide additional information as the design progresses, to assess system operation across all normal and abnormal operating modes, or whether adequate safety margins will be maintained.

The SDDs for each system and subsystem have varied degrees of detail but provide information on items such as general system function, system interfaces, seismic requirements, and applicable codes and standards. As the design progresses, OPG will be required to provide detailed design requirements and parameters to assess system operation against the safety analysis, in order to define operational limits and conditions (OLC).

CNSC staff determined that OPG provided sufficient information to support a recommendation that the Commission issue a licence to construct. OPG has committed to provide this detailed information as the design progresses to demonstrate that the steam supply systems have been designed, manufactured, installed, and commissioned to meet applicable regulatory expectations, codes, and standards.

OPG will be required to provide additional detailed design information for each of these systems as the design progresses. CNSC staff will review the information to determine whether the design meets regulatory expectations. These commitments are summarised in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

2.5.2.5.9 Auxiliary Systems

The PSAR identifies several auxiliary systems for the BWRX-300 reactor, including the following:

- Associated water supply systems, including:

  - The Circulating Water System (CWS) (see subsection A.2.5.9.1.1 – *The Circulating Water System*).
  - Reactor Water Cleanup (CUW) System (see subsection A.2.5.9.1.2 – *Reactor Water Cleanup System (CUW)*).
  - Shutdown Cooling (SDC) System (see subsection A.2.5.9.1.3 – *The Shutdown Cooling System (SDC)*).
  - Chilled Water Equipment (CWE) System (see subsection A.2.5.9.1.4 – *Chilled Water Equipment (CWE) System*).
  - Isolation Condenser System Pool Cooling and Clean-up (ICC) System (see subsection A.2.5.9.1.5 – *Isolation Condenser System Pool Cooling and Clean-up System*).
- Heat Transfer to an Ultimate Heat Sink (see subsection A.2.5.9.2 – *Heat Transfer to an Ultimate Heat Sink*).
- Heating, Ventilation, and Air Conditioning (see subsection A.2.5.9.3 – *Heating, Ventilation, and Air Conditioning*).
- Process Auxiliary Systems (see subsection A.2.5.9.4 – *Process Auxiliary Systems*), including:
  - Plant Pneumatic System (PPS)
  - Standby Diesel Generator (SDG) Supporting Systems

CNSC staff review of each of these auxiliary systems are described in the subsections referenced above.

Based on a review of OPG's application and supporting documentation, CNSC staff determined that the information provided regarding auxiliary systems was sufficient to support a recommendation that the Commission issue a licence to construct. As outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*, OPG has committed to provide all required evidence as the design of auxiliary systems progresses to demonstrate that these systems have been designed, manufactured, installed, and commissioned to meet applicable regulatory expectations, codes, and standards. CNSC staff will conduct a technical review and complete verification activities to verify compliance with regulatory requirements and expectations, should the Commission issue a licence to construct.

2.5.2.5.10 Fuel Handling and Storage Systems

CNSC staff's detailed review and assessment of the Fuel Handling System (FHS) and its associated subsystems is provided in subsection A.2.5.10 – *Fuel Handling and Storage Systems*.

Subsection 9A.1 of the PSAR describes the BWRX-300 Fuel Handling and Storage System and its associated subsystems. The purpose of CNSC staff's review was to verify that the preliminary design of the FHS includes the capability to transfer un-irradiated and irradiated fuels, ensure the integrity of the fuel, provide for safe

storage facilities, provide the capability to respond to abnormal conditions, as well as including the facilities to allow for surveillance, inspection, and testing of the fuel.

The Fuel Storage Pool contains several fuel storage racks, intended to store new fuel once received on-site and prior to core loading, as well as fuel that is discharged from the reactor during refuelling outages. The portion of the reactor building above-grade houses the refuelling floor, fuel handling systems, and the associated RB crane.

Figure A-14 in Appendix A provides an overview of the Fuel Storage Pool arrangement, including the fuel storage racks, the cask loading area, and the relation between the fuel handling areas and the reactor well.

CNSC staff's review of OPG's application and supporting documentation determined that the level of design information for the Fuel Handling System is sufficient to address the expectations outlined in REGDOC-1.1.2 and REGDOC-2.5.2. However, CNSC staff expect OPG to provide additional information, such as design manuals, specifications, and detailed system flowsheets as the design progresses. OPG has committed to provide this detailed information as the design progresses, to demonstrate that the fuel handling systems have been designed, manufactured, installed, and commissioned to meet regulatory expectations, codes, and standards. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* identifies these commitments, related to RHP-2: Installation of the Reactor Pressure Vessel.

2.5.2.5.11 Waste Treatment and Control Systems

Subsection 4.15.6, *Waste Treatment and Control*, of REGDOC-1.1.2 and subsection 8.11, *Waste Treatment and Control*, of REGDOC-2.5.2 – *Design of Reactor Facilities* states that an application for a licence to construct a reactor facility should describe how the generation of radioactive and hazardous wastes are minimised, how wastes are characterised, controlled, handled, conditioned, and disposed of, and indicate which systems are or will be in service before initial fuel load.

CNSC staff's review of OPG's application and supporting documentation, focused on the minimisation, characterisation, control, and handling of hazardous wastes generated from the proposed construction activities is discussed in subsection 2.10 – *Waste Management*. CNSC staff's detailed review and assessment of the Liquid and Solid Radioactive Waste Management systems are provided in subsection A.2.5.11 – *Waste Treatment and Control Systems* .

CNSC staff have determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. OPG will be required to provide additional detailed information as the design progresses, related to the design and operation of the Liquid Waste Management (LWM) and

Offgas Systems (OGS), respectively, including information regarding any potential for discharge of treated liquid effluents to the environment.

Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* summarises the commitments to provide additional detailed information about the radioactive waste management systems.

2.5.2.5.12 Fire Safety and Fire Protection Systems

CNSC staff's detailed review and assessment of the provided Fire Protection Assessments are provided in subsection A.2.5.12 – *Fire Safety and Fire Protection Systems*.

Subsection 7.12, *Fire Safety*, of REGDOC-2.5.2 requires that the design of the nuclear facility include provisions for fire safety. The design shall incorporate operational procedures, redundant SSCs, physical barriers, spatial and fire separation, and fail-safe design provisions to achieve fire safety objectives. Fire suppression systems shall also be design and located such that their rupture or spurious activation will not impair the capability of SSCs important to safety.

OPG has conducted Fire Protection Assessments (FPA) that document the fire safety measures to be implemented to meet fire safety objectives. These assessments contain companion documentation to demonstrate fire safety design adequacy at the DNNP plant, such as the Fire Hazards Assessment (FHA), the Fire-Safe Shutdown Analysis (FSSA), and the Code Compliance Review (CCR).

OPG noted in its submission that the FPA is performed based on CSA Group Standard N293 – *Fire Protection for Nuclear Power Plants (2012)* [R2.4-5], N293S1 – *Supplement #1 to Fire Protection for Nuclear Power Plants*, and their associated reference materials. CNSC staff note that this assessment is preliminary based on the current state of the design and does not yet include all analysis necessary for an FPA for an operating nuclear facility.

Based on a review of OPG's application and supporting documentation, CNSC staff have determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. OPG has committed to provide updated assessments (i.e., the FHA, CCR, and FSSA) for CNSC staff evaluation and validation as the design progresses. In addition, OPG is required to submit fire protection system design information as well as a third-party review of the finalised design information, in accordance with the requirements of CSA N293. These commitments are outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

2.5.2.6 Ageing Management

CNSC staff's detailed review and assessment of the BWRX-300 ageing management program is provided in subsection A.2.5.13 – *Ageing Management*.

Subsection 7.17, *Aging and Wear*, of REGDOC-2.5.2 outlines expectations that the design of the nuclear facility consider the effects of ageing and wear on SSCs important to safety.

CNSC staff review of OPG's application and its supporting documentation, with respect to ageing management, concluded that OPG has considered ageing of SSCs in the underlying design processes. CNSC staff have determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. REGDOC-2.6.3 – *Ageing Management* provides expectations applicable to all lifecycle phases of the reactor, including during design and construction and potential future operation. OPG has committed to incorporate these requirements to its ageing management program as the design and facility progress to address all requirements in REGDOC-2.6.3. OPG will be required to provide additional detailed information, and CNSC staff will continue to review applicable design elements, including adequate consideration of ageing aspects, as the design progresses.

2.5.3 Key References for this SCA

[R2.5-1] OPG document, NK054-SR-01210-00001 – *OPG DNNP BWRX-300 Preliminary Safety Analysis Report: Revised Chapter 2 – Site Characteristics*, revision 1.

[R2.5-2] Government of Ontario, *Water Management: Policies, Guidelines, and Provincial Water Quality Objectives*, first published in 1994.

[R2.5-3] OPG document, NK054-REP-01210-0001 – *DNNP Supporting Environment Studies: Environment*, revision 1, dated December 2022.

[R2.5-4] OPG document, NK38-REP-07730-10020 – *Fish Impingement Sampling at Darlington Nuclear Generating Station*, revision 0, dated October 2011.

[R2.5-5] OPG document, D-REP-07811-0982780 – *Darlington Nuclear Site Biodiversity Monitoring Program Three Year Report (2019-2021)* revision 0.

[R2.5-6] OPG report, N-REP-03443-10027 – *2021 Results of Environmental Monitoring Programs*, revision 1, dated July 2023 (accessible from OPG's website).

[R2.5-7] OPG document, NK054-REP-07730-00029 – *Environmental Impact Statement: New Nuclear – Darlington Environmental Assessment*, dated September 2009 (accessible from OPG's website).

[R2.5-8] OPG document, NK054-REP-07330-00053 – *Soil Characterisation Report*, revision 0, dated September 2021 (Protected).

[R2.5-9] Government of Ontario, *Soil, Groundwater and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act*, Table 3 – *Full Depth Generic Site Conditions in a Non-Potable Groundwater Condition*, first published July 2011.

[R2.5-10] OPG document, NK054-PLAN-01210-00008 – *Darlington New Nuclear Project: Program Management Plan*, revision 2, dated November 2023.

[R2.5-11] OPG document, N-CHAR-AS-0002 – *Nuclear Management System*, revision 22, dated December 2021.

[R2.5-12] OPG document, NK054-DP-01210-00001 – *Darlington New Nuclear Project Integrated Project Design Plan (IPDP)*, revision 0, dated September 2022.

[R2.5-13] OPG document, N-PROC-MP-0078 – *Specification, Review, Acceptance, and Use of Vendor Technical Documents*, revision 11, dated December 2023.

[R2.5-14] OPG document, N-STD-MP-0009 – *Contractor/Owner Engineering Interface and Oversight*, revision 7, dated May 2021.

[R2.5-15] OPG document, NK054-COI-01210-00002 – *Darlington New Nuclear Project Contractor/Owner Interface Requirements*, revision 0, dated March 2023 (Protected).

[R2.5-16] GE Hitachi document, NEDO-11209 – *GE Hitachi Nuclear Energy Quality Assurance Program Description*, dated December 2022.

[R2.5-17] OPG document, NK054-MAN-01210-00002 – *BWRX-300 DNNP ALARA Design Criteria for Canada*, revision 0, dated March 2024.

[R2.5-18] OPG document, NK054-REP-01210-00183 – *BWRX-300 Darlington New Nuclear Project (DNNP) Safety Strategy*, revision 0, dated May 2023.

[R2.5-19] OPG document, NK054-SR-01210-00001, *Ontario Power Generation Inc., Darlington New Nuclear Project, BWRX-300 Preliminary Safety Analysis Report – Chapter 3: Safety Objectives and Design Rules for Structures, Systems, and Components*, revision 1, dated March 2023.

[R2.5-20] NEDO-34030 NK054-REP-01210-00186 – *BWRX-300 Darlington New Nuclear Project (DNNP) Important to Safety and Safety-Related Terminology*, revision 0, dated May 2023.

[R2.5-21] USNRC Regulatory Guide, 1.26 – *Quality Group Classifications and Standards for Water-, Steam-, and Radioactive Waste-Containing Components of Nuclear Power Plants*, revision 6, dated December 2021.

[R2.5-22] CSA Group standard, N285.0 – *General Requirements for Pressure-Retaining Systems and Components in CANDU Nuclear Power Plants / Material Standards for Reactor Components for CANDU Nuclear Power Plants*, 2017 edition.

[R2.5-23] USNRC Regulatory Guide, 1.183 – *Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors*, revision 2, published on 16 October 2023.

[R2.5-24] National Research Council, *National Building Code of Canada*, 2020 edition.

[R2.5-25] CNSC Regulatory Document, REGDOC-2.6.1 – *Reliability Programs for Nuclear Power Plants*, version 1, published August 2017.

[R2.5-26] OPG document, NK054-REP-01210-00184 – *BWRX-300 Darlington New Nuclear Project (DNNP): Structures, Systems, and Components Classification Report*, revision 0, dated May 2023.

[R2.5-27] OPG document, NK054-PROG-60009-00001 – *BWRX-300 DNNP Design Reliability Assurance Program*, revision 0 (Protected).

[R2.5-28] OPG document, NK054-PROG-01500-00001 – *BWRX-300 Reliability, Availability, Maintainability, and Inspectability Program*, revision 0 (Protected).

[R2.5-29] CSA Group Standard, N290.9 – *Reliability and Maintenance Programs for Nuclear Power Plants*, 2019 edition.

[R2.5-30] OPG document, *Darlington New Nuclear Project: BWRX-300 Preliminary Safety Analysis Report – Chapter 18: Human Factors Engineering*, revision 0, dated September 2022.

[R2.5-31] OPG document, NK054-PLAN-01210-00108 – *Darlington New Nuclear Project (DNNP) Design Plan: Design Plan*, Sheet 5, revision 0, dated April 2023.

[R2.5-32] OPG document, NK054-PLAN-01210-00100 – *Darlington New Nuclear Project: Licensing Program Management Plan*, Sheet 8, revision 0, dated March 2022.

[R2.5-33] National Research Council of Canada, *National Fire Code of Canada*, 2020 edition.

[R2.5-34] CSA group standard, N291 – *Requirements for Nuclear Safety-Related Structures*, 2015 edition, reaffirmed in 2019.

[R2.5-35] CSA Group Standard, N289 – *General Requirements for Seismic Design and Qualification of Nuclear Power Plants*.

[R2.5-36] USNRC Regulatory Guide, RG 1.143 – *Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water Cooled Nuclear Power Plants*.

[R2.5-37] American Society of Mechanical Engineers (ASME), *Boiler and Pressure Vessel Code*, 2021 edition.

[R2.5-38] CSA Group Standard, N290.13 – *Environmental Qualification of Equipment for Nuclear Power Plants*, 2018 edition.

[R2.5-39] CSA Group Standard, N289.1 – *General Requirements for Seismic Design and Qualification of Nuclear Power Plants*, 2018 edition.

[R2.5-40] OPG report, NK054-REP-01210-00160 – *BWRX-300 Darlington New Nuclear Project (DNNP) GNF2 Fuel Assembly Mechanical Design Report*, revision 0.

[R2.5-41] OPG report, NK054-REP-01210-00161 – *BWRX-300 Darlington New Nuclear Project (DNNP) GNF2 Fuel Assembly Thermal-Mechanical Design Report*, revision 0.

[R2.5-42] USNRC document, NUREG-0800 / BTP 3-4 – *Postulated Rupture Locations in Fluid System Piping Inside and Outside Containment*, revision 2, dated March 2007.

[R2.5-43] CSA Group Standard, N290.11 – *Requirements for Reactor Heat Removal Capability during Outage of Nuclear Power Plants*, 2021 edition.

[R2.5-44] Report, NK054-REP-03555-00001 – *BWRX-300 Containment Evaluation Method*, revision 3, dated June 2022 (Protected).

[R2.5-45] GE Hitachi Report, NEDC-33926P – *BWRX-300 Steel-Plate Composite Containment Vessel (SCCV) and Reactor Building Structural Design*, revision 2, dated April 2024.

[R2.5-46] IEC document, 61513 – *Nuclear Power Plants: Instrumentation and Control Important to Safety – General Requirements for Systems*

[R2.5-47] IEC document, 60709 – *Nuclear Power Plants: Instrumentation, Control, and Electrical Power Systems Important to Safety – Separation.*

[R2.5-48] GE Hitachi document, 006N2631 – *BWRX-300 Plant Level Instrumentation and Control Architecture Design Assurance Plan*, revision 2, dated July 2023 (Protected).

[R2.5-49] CSA Group Standard, N290.14 – *Qualification for Digital Hardware and Software for Use in Instrumentation and Control Applications for Nuclear Power Plants*, 2015 edition, reaffirmed in 2020.

[R2.5-50] CSA Group Standard, N292.1 – *Wet Storage of Irradiated Fuel and Other Radioactive Materials*, 2016 edition, reaffirmed 2021.

[R2.5-51] IAEA document, INSAG-10 – *Defence in Depth in Nuclear Safety*, published in 1996.

[R2.5-52] IAEA document, SSG-63 – *Design of Fuel Handling and Storage Systems for Nuclear Power Plants*, published in 2020.

[R2.5-53] IAEA document, SSG-73 – *Core Management and Fuel Handling for Nuclear Power Plants*, published in 2022.

[R2.5-54] CSA Group Standard, N293S1 – *Supplement #1 to N293-12: Fire Protection for Nuclear Power Plants (Application to Small Modular Reactors*), 2021 edition, reaffirmed in 2022.

[R2.5-55] OPG document, NK054-REP-01210-00147 – *BWRX-300 Darlington New Nuclear Project (DNNP) Preliminary Fire Safe Shutdown Requirement and Analysis*, revision 0.

[R2.5-56] Nuclear Energy Institute, 00-01 – *Guidance for Post Fire Safe Shutdown Circuit Analysis* (Proprietary industry document).

[R2.5-57] CNSC Regulatory document, REGDOC-2.6.3 – *Ageing Management*, version 1, published March 2014.

2.6 Radiation Protection

The Radiation Protection SCA covers the implementation of a radiation protection (RP) program in accordance with the *Radiation Protection Regulations*. The program must ensure that contamination levels and radiation doses received by individuals are monitored, controlled, and maintained As Low as Reasonably Achievable (ALARA).

The specific areas that comprise this SCA at the DNNP include:

- Application of ALARA
- Worker Dose Control
- Radiological Hazard Control
- Radiation Protection Program Performance

2.6.1 Regulatory Requirements and CNSC Staff Conclusions

The regulatory foundation for the recommendation(s) associated with the Radiation Protection SCA includes the following:

- The *Nuclear Safety and Control Act*, subsection 24(4), paragraph 27(a)
- The *General Nuclear Safety and Control Regulations*, paragraphs 3(1)(e), 3(1)(f), 12(1)(c), and 12(1)(d)
- The *Radiation Protection Regulations*, paragraph 4(a)(i), subsections 5(1), 5(2), 13(1), and 14(1)

CNSC staff conclude that OPG has met the regulatory requirements.

The regulatory expectations for the recommendation(s) associated with the Radiation Protection SCA includes the following:

- REGDOC-1.1.2 – *Licence Application Guide: Guide to Construct a Reactor Facility (version 2)*, subsection 4.7
- REGDOC-2.7.1 – *Radiation Protection (version 1)*
- REGDOC-2.7.2 – *Dosimetry Volume I: Ascertaining Occupational Dose (version 1)*

CNSC staff are satisfied that OPG will implement sufficient measures in accordance with the *Radiation Protection Regulations* for the protection of workers during the proposed licence to construct activities.

One standardised licence condition is included in the proposed licence. Licence condition 7.1 will require the licensee to implement and maintain an RP program. Compliance verification criteria for this licence condition is included in the draft *Licence Conditions Handbook*.

2.6.2 Discussion

Section 4 of the *Radiation Protection Regulations* requires that every licensee implement a RP program and maintain the effective dose and equivalent dose received by and committed to persons as low as reasonably achievable.

Subsection 4.7, *Radiation Protection*, of REGDOC-1.1.2 outlines expectations that an application for a licence to construct describe a RP program that is commensurate with the radiological hazards encountered during conduct of licensed activities. The application also is to contain a description of how the anticipated radiological hazards will be monitored and controlled during construction activities.

CNSC staff review of OPG's application and supporting documents is detailed in the specific areas listed below.

2.6.2.1 Application of ALARA

OPG has indicated that during the construction phase, there will be no nuclear substances requested for use, and there are no plans for OPG or its contractors to conduct radioactive work as part of the proposed construction activities.

Due to the anticipated very low worker exposures during construction activities, OPG has not committed additional resources to further reduce radiological doses during the proposed LTC phase. CNSC staff determined that this was acceptable.

2.6.2.2 Worker Dose Control

Subsection 5(1) of the *Radiation Protection Regulations* requires licensees to ascertain and record the magnitude of radiation exposure, the effective dose, as well as the equivalent dose, to workers performing work, as defined in the *Nuclear Safety and Control Act* (NSCA). However, paragraph 5(2)(b) states that should the "*time and resources required for direct measurement […] outweigh the usefulness of ascertaining the amount of exposure and doses using [direct measurement]*," the licensee can estimate them.

Workers may be exposed to very low levels of ionising radiation above background during the proposed licensed activities conducted at the DNNP site during the construction phase, due to the proximity of the Darlington Waste Management Facility (DWMF) and Darlington Nuclear Generating Station (DNGS).

As is the practice employed with OPG's existing power reactor site preparation licence (PRSL), due to the very low level of exposure anticipated, workers conducting licensed activities at the DNNP during construction will not be considered as Nuclear Energy Workers (NEWs), as defined by the NSCA.

As applicable to the RP SCA and consistent with commitment D-P-2.1 in the *DNNP Commitments Report* [R1-6], OPG's Occupational Health & Safety (OHS)

plan, NK054-PLAN-01210-00034 – *Darlington New Nuclear Project (DNNP) Health and Safety Plan* [R2.6-1], was implemented under the LTPS to facilitate the assessment of doses to workers in accordance with section 4 of the *Radiation Protection Regulations*.

This plan requires OPG to collect and interpret DWMF and DNGS facilities' perimeter radiation data, and estimate DNNP worker doses using this data, to verify that doses are kept below effective and equivalent dose limits for workers who are not NEWs. CNSC staff note that OPG updated this plan to apply to the construction phase of the project. Should the Commission issue a construction licence, OPG will continue its implementation throughout the construction phase and CNSC will verify through compliance verification activities.

As required by condition 3.2 of PRSL 18.00/2031 [R1-1], OPG shall submit for CNSC review an annual report summarising the activities conducted in the previous calendar year, to assure that licensed activities are being conducted in a manner that protects the health and safety of persons and of the environment. This report also provides estimated worker dose data. Licensed activities at the DNNP site began in 2022 and represent the first estimates for worker doses for DNNP.

OPG has submitted its annual report for the 2023 calendar year covering site preparation activities, including estimates for worker doses [R2.6-2]. OPG indicated that radiological doses to workers on-site under the PRSL are below the regulatory dose limits for a person who is not a NEW. Should the Commission issue a licence to construct, CNSC staff expect that the radiological doses to workers performing licensed activities will remain well below regulatory dose limits throughout the construction phase.

2.6.2.3 Radiological Hazard Control

The proposed work activities under the LTC do not involve radiological work with nuclear substances or radiation devices and as such, the measures implemented for radiological hazard control will be minimal. Work conducted with tools containing radioactive nuclear substances will be performed under the authority of separate CNSC-issued Nuclear Substances and Radiation Devices licence(s) and is not a component of the proposed licensed activities.

2.6.2.4 Radiation Protection Program Performance

Should the Commission issue OPG a licence to construct, CNSC staff will continue to monitor and review OPG's RP program performance on a routine basis, to ensure that the program remains effective in the protection of workers and is commensurate with the level of radiological risk.

As previously noted, contractors using tools containing nuclear substances and/or radiation devices, will be required to follow their CNSC approved RP program.

2.6.3 Key References for this SCA

[R2.6-1] OPG document, NK054-PLAN-01210-00034 – *Darlington New Nuclear Project (DNNP) Health and Safety Plan*, revision 1, dated April 2022.

[R2.6-2] OPG report, NK054-REP-01210-00193 – *2023 Annual Report for Licensed Activities at the Darlington New Nuclear Project*, dated April 2024.

2.7 Conventional Health and Safety

The Conventional Health and Safety SCA covers the implementation of a program to manage workplace safety hazards and to protect workers. The specific areas that comprise this SCA at the DNNP include:

- Performance
- Practices
- Awareness

2.7.1 Regulatory Requirements and CNSC Staff Conclusions

The regulatory foundation for the recommendation(s) associated with the Conventional Health and Safety SCA includes the following:

- The *Nuclear Safety and Control Act*, subsection 24(4)
- The *General Nuclear Safety and Control Regulations*, paragraphs 12(1)(b), 12(1)(c), 12(1)(e), 17(a), 17(b), 17(c)(i), 17(e)
- The *Class I Nuclear Facilities Regulations*, paragraph 3(e), 3(f)

CNSC staff conclude that OPG has met the regulatory requirements.

The regulatory expectations for the recommendation(s) associated with the Conventional Health and Safety SCA includes the following:

- REGDOC-1.1.2 – *Licence Application Guide: Guide to Construct a Reactor Facility* (version 2), subsection 4.8
- REGDOC-2.8.1 – *Conventional Health and Safety* (version 1) [R2.7-1]

CNSC staff reviewed OPG's application with respect to the conventional health and safety SCA, by considering OPG's current program in the context of its applicability to DNNP construction activities against regulatory requirements. CNSC staff determined that OPG has met the regulatory requirements.

Should the Commission issue a construction licence, CNSC staff will continue to provide regulatory oversight to verify that work activities performed are conducted with adequate safety measures and in compliance with regulatory requirements. OPG's program will continue to be monitored to verify that workers are protected from conventional hazards.

CNSC staff conclude that OPG has an established conventional health and safety program, that is applicable and appropriate for the proposed activities under a potential DNNP construction licence, and that this program meets the regulatory expectations outlined in REGDOC-1.1.2 and REGDOC-2.8.1.

One standardised licence condition is included in the proposed licence. Licence condition 8.1 will require that the licensee implements and maintains a conventional health and safety program. Compliance verification criteria for this licence condition is included in the draft *Licence Conditions Handbook.*

2.7.2 Discussion

Paragraph 12(1)(c) of the *General Nuclear Safety and Control Regulations* requires that all licensees take reasonable precautions to protect the environment and the health and safety of workers.

Subsection 4.8, *Conventional Health and Safety*, of REGDOC 1.1.2, and REGDOC 2.8.1 collectively set out expectations for having a program to manage workplace safety hazards and to protect workers to meet requirements of *Nuclear Safety Control Act* (NSCA), *Canada Labour Code Part II* [R2.7-2], the *Canada Occupational Health and Safety Regulations* [R2.7-3], and Ontario's *Occupational Health and Safety Act* [R2.7-4].

OPG is conducting site preparation activities as part of their Licence to Prepare Site (LTPS), which authorises OPG to perform activities such as land clearing and grading and installation of construction services to prepare the site for potential future construction activities. The effective implementation of OPG's occupational health and safety program has been critical for OPG to ensure a safe work environment for the protection of OPG's workers and contractors executing work on behalf of OPG.

Should the Commission issue a Licence to Construct (LTC), the occupational health and safety of OPG's workers and their contractors will continue to be key in completing the construction project safely.

CNSC staff reviewed OPG's application and its supporting documents with respect to Conventional Health and Safety regulatory requirements, to confirm that OPG has developed and implemented programs, policies, and procedures to ensure safety of their employees and their contractors.

OPG is using the existing management system from the Darlington Nuclear Generating Station (DNGS), including health and safety procedures receiving authority from the overarching policy statement outlined in OPG-POL-0001 – *Health and Safety Policy* [R2.7-5]. To address occupational considerations from site preparation and construction activities, and identify steps that OPG has in place to ensure compliance with regulatory requirements, OPG has developed a health and safety plan specific to the DNNP, documented in NK054-PLAN-01210-00034 – *Darlington New Nuclear Project (DNNP) Health and Safety Plan* [R2.6-1].

OPG is also required to ensure its contractors' health and safety plans are in place to ensure the protection of contract workers and is also required to ensure the contractors' plans are developed in compliance with OPG's policies and procedures. Contract workers are required to have current safety training, and the contractor company must have safety audits completed in accordance with their Quality Management Systems.

Should an incident occur during construction, OPG and the contractor are obligated to report and investigate the incident as per the existing OPG procedure OPG-PROC-0120 – *Safety Incident and Regulatory Event Response* [R2.7-6] and develop corrective actions following OPG-PROC-0121 – *Safety Incident Investigation and Corrective Actions* [R2.7-7]. OPG will also be required to report the incident to the CNSC in accordance with reporting requirements outlined in regulatory document REGDOC-3.1.1 – *Reporting Requirements for Nuclear Power Plants* [R2.3-2].

Should the Commission issue OPG a licence to construct, CNSC staff will continue to conduct compliance oversight activities during the licence period to ensure OPG and its contractors are compliant with occupational health and safety regulatory requirements.

2.7.3 Key References for this SCA

[R2.7-1] CNSC Regulatory Document, REGDOC-2.8.1 – *Conventional Health and Safety*, published July 2019.

[R2.7-2] Statutes of Canada, *Canada Labour Code Part II*, 1985 c. L-2, last amended on 09 July 2023.

[R2.7-3] Statutory Orders and Regulations of Canada, *Canada Occupational Health and Safety Regulations*, SOR/86-304, last amended on 15 December 2023.

[R2.7-4] Royal Statutes of Ontario, *Occupational Health and Safety Act*, R.S.O. 1990 c. O.1, last amended on 01 January 2024.

[R2.7-5] OPG policy, OPG-POL-0001 – *Employee Health and Safety Policy*, revision 17, dated January 2024.

[R2.7-6] OPG procedure, OPG-PROC-0120 – *Safety Incident and Regulatory Event Response*, revision 5, dated June 2020.

[R2.7-7] OPG procedure, OPG-PROC-0121 – *Safety Incident Investigation and Corrective Actions*, revision 3, dated June 2020.

2.8 Environmental Protection

The Environmental Protection SCA covers programs that identify, control, and monitor all releases of radioactive and hazardous substances and effects on the environment from facilities or as the result of licensed activities.

The specific areas that comprise this SCA at the DNNP include:

- Environmental Risk Assessment
- Effluent and Emissions Control (releases)
- Assessment and Monitoring
- Protection of People
- Environmental Management System

2.8.1 Regulatory Requirements and CNSC Staff Conclusions

The regulatory foundation for the recommendation(s) associated with the Environmental Protection SCA includes the following:

- The *Canadian Environmental Assessment Act (1992)*
- The *Canadian Environmental Protection Act*
- The *Nuclear Safety and Control Act*, subsection 24(4)
- The *General Nuclear Safety and Control Regulations*, paragraphs 12(1)(c), 12(1)(f), 17(b), 17(c)(i), 17(c)(v), 17(e)
- The *Class I Nuclear Facilities Regulations*, paragraphs 3(e), 3(g), 3(h), 5(b), 5(i), 5(j), 5(k)

CNSC staff conclude that OPG has met the regulatory requirements.

The regulatory expectations for the recommendation(s) associated with the Environmental Protection SCA includes the following:

- REGDOC-1.1.2 – *Licence Application Guide: Guide to Construct a Reactor Facility (version 2)*, subsection 4.9
- REGDOC-2.5.2 – *Design of Reactor Facilities (version 1)*, subsection 10.2
- REGDOC-2.9.1 – *Environmental Principles, Assessments and Protection Measures (version 1.2)* [R2.8-1].

During the proposed licence period, CNSC staff will focus on the implementation of OPG's environmental protection program in accordance with REGDOC-2.9.1, continue to verify the implementation of CSA N288 series of standards, and the incorporation of DNNP-specific requirements into OPG's overall Environmental Monitoring Program at the DN site. CNSC staff will also focus on the continued implementation of the OPG's EA Follow up Program to ensure the predictions of

environmental effects of the Environmental Assessment (EA), completed under the *Canadian Environmental Assessment Act (1992)*, are accurate and that mitigation measures are effectively implemented. CNSC staff will conduct compliance oversight activities to verify that OPG has implemented the mitigation measures identified in the EA follow-up monitoring program throughout the construction phase.

CNSC staff expect that future updates to OPG document N-PROC-OP-0025 – *Management of the Environmental Monitoring Programs* will include updated language to demonstrate compliance with CSA N288.4 – *Environmental Monitoring Programs at Class 1 Nuclear Facilities and Uranium Mines and Mills (2019 edition)*.

Based on OPG's commitment to update its ERA, the Environmental Protection Program for the Darlington site will be revised and updated to include DNNP-specific requirements. Improvements to environmental monitoring and protection activities should also be made to reflect any current and future assessments, and stakeholder input.

Based on an assessment and review of OPG's licence application, supporting documentation, OPG's past performance at the Darlington Nuclear site and OPG's commitments outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*, CNSC staff are satisfied that OPG has demonstrated a continued commitment to comply with regulatory expectations, and will continue to make adequate provisions to protect the public and the environment. These commitments are related to RHP-1: Installation of the Reactor Building foundation, or RHP-3: Fuel-Out Commissioning.

Three standardised licence conditions are included in the proposed licence. They are summarised as follows:

- Licence condition 9.1 will require that the licensee implements and maintains an environmental protection program.

- Site-specific licence condition 15.1 will require that the licensee implement mitigation measures and commitments made during the Joint Review Panel process, including the recommendations of the JRP report, as well as additional mitigation measures identified and described in CNSC staff's CMD 24-H2.

- Site-specific licence condition 15.2 will require that the licensee implements the provisions of the DNNP Environmental Assessment Follow-up Plan.

Compliance verification criteria for these licence conditions are included in the draft *Licence Conditions Handbook.*

2.8.2 Discussion

Paragraph 12(1)(c) of the *General Nuclear Safety and Control Regulations* requires that all licensees take reasonable precautions to protect the environment and the health and safety of workers.

Subsection 13, *Environmental Protection*, of REGDOC 1.1.2 [R1-6], as well as REGDOC-2.9.1 collectively set expectations for assessing the impact of the plant on the environment and developing environmental protection policies, programs and procedures for the nuclear facility.

CNSC staff assessment throughout this subsection addresses environmental protection strategies relevant to the activities associated with the licence to construct as well as information related to the overall environmental effects resulting from the construction phase of the project.

During the construction phase, the DNNP will not produce any radiological releases and will not contribute to doses received by members of the public from activities at the Darlington Nuclear (DN) site.

OPG's Environmental Management System, which is required under OPG's OPG-POL-0021 – *Environmental Policy* [R2.8-2], establishes an environmental protection program that meets regulatory requirements. The DNNP activities will comply with the requirements of OPG's Environmental Policy. Within OPG's existing environmental protection program, OPG's effluent monitoring program and environmental monitoring program will be maintained.

2.8.2.1 Environmental Risk Assessment

An Environmental Risk Assessment (ERA) is a systematic process used to identify, quantify, and characterise the risk posed by contaminants (radiological and non-radiological/chemical) and physical stressors in the environment on biological receptors. Receptors include humans and non-human biota. Human receptors are assessed through a human health risk assessment (HHRA) and ecological receptors (i.e., non-human biota) are addressed through an ecological risk assessment (EcoRA).

The DNNP was assessed under the Darlington sitewide ERA in 2020, which concluded there were negligible risks to the environment and human health from the DNNP site, based on its status as a facility under the site preparation licence.

REGDOC-2.9.1 and CSA standard N288.6 – *Environmental Risk Assessments at Nuclear Facilities and Uranium Mines and Mills* [R2.8-3] set out expectations that ERAs be updated every five years, or when a project moves to a new phase in the lifecycle (e.g., an application to progress licensing from site preparation to construction). Based on these requirements, OPG is required to submit an updated ERA which captures any environmental and human health risks from construction activities under the proposed LTC.

This ERA will be used to identify any new risks to the environment based on the new activities identified for construction. OPG will then be required to implement any additional mitigation measures and revise its effluent and emission monitoring, and environmental monitoring programs, to comply with REGDOC-2.9.1. This must be completed prior to commencing licensed activities permitted under the licence to construct, to ensure these risks will be mitigated and managed when undertaking the proposed activities.

OPG has committed to provide the predictive ERA for CNSC staff review and acceptance in order to demonstrate compliance, with the expectations outlined in subsection 4.1 of REGDOC-2.9.1, and with the CSA N288.6 standard. This commitment is listed in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*, and related to RHP-1: Installation of the Reactor Building foundation. CNSC staff will review and determine the acceptability of the ERA prior to commencement of construction activities, should a licence to construct be issued.

2.8.2.2 Effluent and Emissions Control (Releases)

Paragraphs 5(j) and 5(k) of the *Class I Nuclear Facilities Regulations* require OPG to submit information on its proposed measures to control releases of nuclear and hazardous substances to the environment, as well as the maximum proposed releases of nuclear and hazardous substances to the environment during the operational period.

The Darlington Nuclear site is required to maintain an up-to-date effluent and emissions monitoring program, in compliance with REGDOC-2.9.1 and relevant standards, including CSA N288.5 – *Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills* [R2.8-4], to ensure that effluents and emissions are controlled. As part of OPG's environmental protection program for the Darlington site, OPG maintains an effluent and emissions monitoring program governed by policy OPG-POL-0021 – *Environmental Policy* [R2.8-2] and N-STD-OP-0031 – *Monitoring of Nuclear and Hazardous Substances in Effluents* [R2.8-5]. CNSC staff have reviewed these programs through compliance activities at the DNGS and determined they meet regulatory requirements. These programs will continue to be implemented during the construction phase and will be validated against the results of the ERA (see subsection 2.8.2.1 – *Environmental Risk Assessment* above).

In addition to the existing environmental protection program, should the Commission issue a licence to construct, OPG will be required to implement project-specific and phase-specific environmental protection measures. This includes NK054-PLAN-07730-00022 – *DNNP Environmental Management and Protection Plan* (EMPP) [R2.8-6] for site preparation activities, NK054-PLAN-007730-00014 – *Environmental Monitoring and Environmental Assessment Follow-up Plan* (EMEAF) [R2.8-7] for DNNP, as well as OPG's associated monitoring plan and methodology reports. This set of documentation is collectively referred to as the EA follow-up monitoring program. OPG has

implemented the EA follow-up monitoring program following the issuance of the first site preparation licence in 2012 as required by the JRP.

Effluents and emissions associated with the construction phase of DNNP will be limited to releases of non-radiological hazardous substances associated with storm water runoff, dewatering activities, blasting, and airborne emissions from construction equipment. Throughout the construction phase, management and monitoring of any releases are addressed by OPG's EMPP and the EA Follow-Up program, and must be compliant with relevant CNSC regulatory requirements, applicable provincial or federal environmental permits, and associated Environmental Compliance Approvals.

OPG has committed to submit the EMPP for CNSC staff review and acceptance prior to the commencement of construction activities. This commitment is included in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

Controls on environmental releases are established to provide protection to the environment and to respect the principles of the optimisation of protection and pollution prevention. As per REGDOC 2.9.1, a licensee's control measures on releases to the environment are established based on pollution prevention, incorporating the application of best available technology and techniques economically achievable (BATEA), and optimization of protection, keeping all releases to the environment as low as reasonably achievable (ALARA) with social and economic factors being taken into account.

OPG has committed to provide the results of a BATEA/ALARA assessment for CNSC staff review, to demonstrate compliance with paragraphs 5(j) and 5(k) of the *Class I Nuclear Facilities Regulations*, as well as more detailed requirements and guidance of REGDOC-2.9.1.

OPG will be required to implement and maintain an effluent and emissions monitoring program specific to the DNNP site to address commitments made during the JRP process. Should the Commission issue a licence to construct, OPG has committed to submit documentation for the following commitments throughout the Construction phase of the project, for CNSC staff review and acceptance. These commitments will be reviewed in accordance with the accepted completion timeline and criteria indicated in the *Darlington New Nuclear Project Commitments Report* [R1-6]:

- Commitment D-C-2 *Non-Radiological Effluent Management Program*, required to demonstrate compliance with the requirements of paragraphs 5(j) and 5(k) of the *Class I Nuclear Facilities Regulations*, and the requirements and guidance under subsection 4.2 of REGDOC-2.9.1.
- Commitment D-C-4 *Radiological Effluent Management Program*, required to demonstrate compliance with paragraphs 5(j) and 5(k) of the

Class I Nuclear Facilities Regulations, and the requirements and guidance under subsections 4.2 and 4.5 of REGDOC-2.9.1.

- Commitment D-C-5 *Radiological and Non-Radiological Air Emissions Program*, required to demonstrate compliance with paragraphs 5(j) and 5(k) of the *Class I Nuclear Facilities Regulations*, and requirements and guidance under subsections 4.1 and 4.2 of REGDOC-2.9.1.
- Commitment D-C-6 *Radiological Environmental Monitoring Program (REMP)*, required to demonstrate compliance with paragraph 3(h) of the *Class I Nuclear Facilities Regulations*, and requirements and guidance under subsection 4.3 of REGDOC-2.9.1.

Each of these commitments are included in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

2.8.2.3 Assessment and Monitoring

The Darlington Nuclear site is required to maintain an up-to-date environmental monitoring program, in compliance with REGDOC-2.9.1 and relevant standards, including CSA standard N288.4 – *Environmental Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills* [R2.8-8].

The monitoring elements in the EMEAF Plan will be conducted in accordance with existing environmental program governance at Darlington Nuclear site, primarily OPG document N-PROC-OP-0025 – *Management of the Environmental Monitoring Programs* [R2.8-9], which was developed to comply with CSA N288.4.

The environmental monitoring program is required to include details about monitoring locations, frequencies, and environmental parameters to be measured, and is informed by the site-specific Environmental Risk Assessment (ERA). N-PROC-OP-0025 applies to all OPG nuclear sites, which includes the DNNP site within the Darlington Nuclear site. The detailed design of the sitewide Environmental Monitoring Program, as discussed in subsection 2.8.2.5 – *Environmental Management System* below, will be updated to include DNNP specific monitoring, as needed, once the updated ERA is completed.

Groundwater monitoring elements will be implemented through the groundwater protection and monitoring programs for the DNNP and comply with CSA N288.7 – *Groundwater Protection Programs at Class I Nuclear Facilities and Uranium Mines and Mills* [R2.8-10]. OPG is expected to provide an assessment of the ingress and transport of contaminants in groundwater on-site during the successive phases of the DNNP, to address JRP Recommendation 17, based on enhanced groundwater and contaminant transport modelling. In addition, OPG is expected to provide an assessment of the impact of construction dewatering (e.g., the effect on the settlement of the foundation) for CNSC staff review.

CNSC staff will review the submission to confirm that OPG has met regulatory requirements. OPG is also required to update the Radiological Environmental Monitoring Program (REMP) based on this modelling, to include residential and private groundwater well quality in the local study area. These commitments are also identified in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction.*

As described in CMD 24-H2, during construction activities there is the potential for dust emissions to exceed short-term criteria. OPG has committed to maintaining its implementation of a Dust Management Plan as part of the nuisance effects (dust and noise) mitigation measures under the EMPP. OPG will employ an adaptive management program during the construction phase, where the scope of the air quality monitoring as defined in the EMEAF plan may be adapted based on information learned during the implementation of the program. OPG will communicate any changes to the air quality monitoring program with the CNSC.

A Noise Management Plan will also be implemented as part of the nuisance effects (dust and noise) mitigation measures under the EMPP, as noise levels are predicted to increase at off-site receptor locations during construction. The effectiveness of the Noise Management Plan will be confirmed and verified throughout the construction phase, as defined in the EMEAF plan, and during periods that are representative of the worst-case scenarios. Similar to the dust management plan, if regular noise exceedances of hourly sound level criteria are found, then OPG will be required to implement adaptive management policies which may include extended noise monitoring and implementation of additional noise control measures.

OPG will be required to implement adaptive stormwater mitigation features commensurate with construction activities, as well as implement a stormwater monitoring program to comply with requirements issued in environmental permits issued by the Province of Ontario or the Government of Canada. These monitoring activities will be conducted, as documented in the EMEAF plan, to confirm the effectiveness of mitigation measures, particularly the Stormwater Management Plan/Procedure and the Erosion and Sediment Control Plan/Procedure, which are part of the EMPP.

Soil quality will be monitored during the construction phase to confirm the effectiveness of the Hazardous Waste Management Plan, which is also part of the EMPP.

OPG will also be required to comply with mitigation or compensation measures to minimise the impact of construction activities on at-risk or endangered species, or on their habitats, in accordance with any approvals issued under either the federal *Species at Risk Act* or Ontario's *Endangered Species Act*.

The EA follow-up monitoring program also addresses monitoring of potential effects to fish from activities occurring during the DNNP construction phase. JRP Recommendation 30 requires OPG to conduct additional impingement and entrainment sampling at the existing DNGS intake structure to confirm the results reported in the EA. Appendix D.1 – *Status of OPG DNNP Commitments* provides the current status of each of the JRP Recommendations and OPG's commitments to meet the Recommendations.

In its current site preparation licence, OPG is required to provide an annual report documenting the results of its environmental monitoring program, as well as the results from the implementation of actions in the DNNP-specific environmental assessment follow-up program. Should the Commission issue a licence to construct, this requirement will also be included in the draft *Licence Conditions Handbook*.

In addition, the CNSC conducts independent environmental sampling in areas surrounding it's licensed nuclear facilities. The Independent Environmental Monitoring Program (IEMP) is a program put in place by the CNSC to build Indigenous and public trust in the CNSC's regulation of the nuclear industry, via an independent, technical, and accessible environmental sampling program around nuclear facilities. This is in addition to the environmental monitoring programs that nuclear facility licensees implement, as required by their licence. During the construction period, CNSC staff will continue to visit and take samples surrounding the DN site as part of the IEMP. Current IEMP results around the DN Site can be found on the CNSC's website.

2.8.2.4 Protection of People

This specific area is related to ensuring that the public and Indigenous Nations and communities are protected because of releases of nuclear and hazardous substances from the facility.

At the Darlington site, any systems that release conventional (non-radiological) contaminants to the environment are approved under the Ontario Ministry of Environment, Conservation, and Parks in the Environmental Compliance Approvals. These approvals are issued in accordance with provincial legislation (e.g., the Ontario *Environmental Protection Act* [R2.8-11] and the *Ontario Water Resources Act* [R2.8-12]).

OPG is required to report any uncontrolled releases of radioactive and hazardous substances to the environment (e.g., spills) through reporting requirements outlined in Appendix A of CNSC REGDOC-3.1.1 – *Reporting Requirements for Nuclear Power Plants* [R2.3-2]. CNSC staff review these event reports to confirm that the environment and the public are protected from any releases to the environment on the Darlington site.

The *Radiation Protection Regulations* set out regulatory dose limits that are implemented for the protection of the health and safety of persons, including

members of the public. These limits are consistent with the recommendations of the International Commission on Radiological Protection (ICRP). Based on the information provided by OPG in its application, the DNNP will not produce any radiological releases during the construction phase, and therefore the development of DNNP-specific radiological licensed release limits and action levels will not be required until the operation phase.

As part of OPG's application, CNSC staff reviewed NK054-REP-07730-00064 – *Dose Calculations for Human and Non-Human Biota to Support Gap Analysis for DNNP* [R2.8-13], which documents the estimated doses to members of the public from the deployment of four (4) BWRX-300 reactors. Table 2-4 below provides OPG's estimated airborne releases, and the contribution of the respective radionuclides for a single unit.

As discussed in CNSC staff's CMD 24-H2, OPG intends to operate the BWRX-300 reactors under a "zero liquid effluent" operational strategy, meaning there will not be any waterborne radioactive releases during normal operations, and waterborne releases are not included in the dose assessment.

Table 2-4: Estimated Airborne Releases for Radionuclides for a Single BWRX-300 Reactor

Radionuclide	Estimated Airborne Release (Bq/year)	Dose Contribution (mSv/year)
Carbon-14 (C-14)	4.00E+11	2.13E-04
Noble Gases	2.31E+13	6.68E-05
Radioiodines	1.93E+10	8.20E-06
Particulates	1.17E+08	5.00E-08
Tritium	9.70E+11	7.75E-09
Total	**2.45E+13 (24.5 TBq)**	**2.88E-04 (0.288 µSv)**

The estimated dose to the public from normal operations is slightly higher than the 0.6 micro-Sieverts per year (µSv/yr) dose recorded in 2022 [R2.8-14] from the operation of the existing Darlington Nuclear Generating Station (DNGS). CNSC staff note that there are layers of conservatism included in the computer models, in addition to the fact that the DNGS dose assessment is based on environmental monitoring data. CNSC staff note that the combined doses remain a very small fraction of the 1.0 milli-Sievert (mSv) per year regulatory limit for the public defined in the *Radiation Protection Regulations*.

CNSC staff will verify whether the conclusions of the dose assessment remain valid throughout the lifecycle of the facility, including through the results of the BATEA/ALARA assessment, ongoing reviews of the Environmental Assessment

Follow-Up Monitoring program, the site environmental monitoring program, and updates to the environmental risk assessments.

2.8.2.5 Environmental Management System

The CNSC requires licensees to develop and maintain an environmental management system (EMS) to provide a framework for integrated activities related to environmental protection. An EMS refers to the management of an organisation's environmental policies, measures, and procedures in a comprehensive, systematic, planned, and documented manner. OPG's EMS, as documented in OPG-PROG-0005 – *Environment Health and Safety Managed System* [R2.8-15], was developed in accordance with REGDOC-2.9.1 and is registered to ISO standard 14001 – *Environmental Management Systems – Requirements with Guidance for Use (2015 edition)*. The ISO 14001 standard provides expectations to establish, implement, maintain, and continually improve the EMS.

The ISO standard also requires that any person performing work or providing a service on OPG's site, where the work has a potential to cause a significant environmental impact, be competent to perform the work assigned and be aware of the requirements and importance of the EMS.

The DNNP EA follow-up monitoring program will continue to be implemented as project-specific supplementary studies and incorporated within OPG's EMS under the existing NK38-MAN-03443-10002 – *Darlington Environmental Monitoring Program* [R2.8-16]. OPG will make any necessary improvements and updates to the DNNP EA-follow up program prior to, and during, construction activities. These improvements and updates will be provided to CNSC staff for review.

As part of its regulatory oversight of the Darlington Nuclear site, CNSC staff regularly evaluate OPG's EMS to ensure compliance with regulatory requirements. CNSC staff are satisfied that OPG's current EMS is acceptable for the proposed construction activities.

2.8.3 Key References for this SCA

[R2.8-1] CNSC Regulatory Document, REGDOC-2.9.1 – *Environmental Principles, Assessments and Protection Measures*, version 1.2, published September 2020.

[R2.8-2] OPG policy document, OPG-POL-0021 – *Environmental Policy*, revision 9, dated August 2021.

[R2.8-3] CSA Group Standard, N288.6 – *Environmental Risk Assessments at Nuclear Facilities and Uranium Mines and Mills*, 2022 edition.

[R2.8-4] CSA Group Standard, N288.5 – *Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills*, 2022 edition, published January 2022.

[R2.8-5] OPG document, N-STD-OP-0031 – *Monitoring of Nuclear and Hazardous Substances in Effluents*, revision 10, dated December 2022.

[R2.8-6] OPG document, NK054-PLAN-07730-00022 – *DNNP Environmental Management and Protection Plan (EMPP)*, revision 0, dated 15 February 2022.

[R2.8-7] OPG document, NK054-PLAN-07730-00014 – *Environmental Monitoring and Environmental Assessment Follow-Up (EMEAF) Plan*, revision 2, dated December 2023.

[R2.8-8] CSA Group Standard, N288.4 – *Environmental Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills*, 2010 edition, reaffirmed in 2019.

[R2.8-9] OPG document, N-PROC-OP-0025 – *Management of the Environmental Monitoring Programs*, revision 12, dated July 2021.

[R2.8-10] CSA Group Standard, N288.7 – *Groundwater Protection Programs at Class I Nuclear Facilities and Uranium Mines and Mills*, 2015 edition, reaffirmed in 2020.

[R2.8-11] Government of Ontario, *Environmental Protection Act*, R.S.O. 1990, c. E.19, July 2022.

[R2.8-12] Government of Ontario, *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, June 2021.

[R2.8-13] OPG document, NK054-REP-07730-00064 – *Dose Calculations for Human and Non-Human Biota to Support Gap Analysis for DNNP*, revision 1, dated 19 July 2023 (Protected).

[R2.8-14] OPG report, N-REP-03443-10029 – *2022 Results of Environmental Monitoring Programs for Darlington and Pickering Nuclear*, revision 0, dated 07 April 2023 (available on OPG's website).

[R2.8-15] OPG document, OPG-PROG-0005 – *Environment Health and Safety Managed System*, revision 8, dated June 2021.

[R2.8-16] OPG program manual, NK38-MAN-03443-10002 – *Darlington Environmental Monitoring Program*, revision 0, dated August 2017.

2.9 Emergency Management and Fire Protection

The emergency management and fire protection SCA covers emergency plans and emergency preparedness programs which exist for emergencies and for non-routine conditions.

The specific areas that comprise this SCA at the DNNP include:

- Conventional Emergency Preparedness and Response
- Nuclear Emergency Preparedness and Response
- Fire Emergency Preparedness and Response

2.9.1 Regulatory Requirements and CNSC Staff Conclusions

The regulatory foundation for the recommendation(s) associated with Emergency Management and Fire Protection SCA includes the following:

- The *Nuclear Safety and Control Act*, subsection 24(4)
- The *General Nuclear Safety and Control Regulations*, paragraphs 3(1)(d), 3(1)(i), 12(1)(a), 12(1)(c), 12(1)(d), 12(1)(e), and 12(1)(f)
- The *Class I Nuclear Facilities Regulations*, paragraphs 3(1)(f), 5(i), 5(k).

CNSC staff conclude that OPG has met the regulatory requirements.

The regulatory expectations for the recommendation(s) associated with Emergency Management and Fire Protection SCA includes the following:

- REGDOC-1.1.2 – *Licence Application Guide: Guide to Construct a Reactor Facility (version 2)*, subsection 4.10
- REGDOC-2.10.1 – *Nuclear Emergency Preparedness and Response (version 2)* [R2.9-1].
- CSA Group standard N293 – *Fire Protection for Nuclear Power Plants* [R2.4-5]
- The *National Building Code of Canada (2020 edition)* [R2.5-24]
- The *National Fire Code of Canada (2020 edition)* [R2.5-33]

CNSC staff note that a detailed nuclear emergency planning basis is not required at the construction phase, however OPG will be required to update its planning basis before the operation phase of the project. DNNP Commitment D-O-2 *Nuclear Emergency Plan*, documented in the *DNNP Commitments Report* [R1-6] captures OPG's commitment to update the details related to their emergency preparedness and response program specific to the DNNP. CNSC staff note that additional details will be required whether an on-site fire brigade will be established specifically for the DNNP during the LTO stage.

Information provided in the fire protection assessments is preliminary and OPG noted that they are subject to be updated as the design matures. CNSC staff will

review the updated FPA by OPG to confirm that OPG has met all applicable regulatory requirements.

CNSC staff have determined that OPG has provided sufficient information to support CNSC staff recommendation that the Commission issue a licence to construct. OPG is required to submit for CNSC review and approval the updated FPA (FHA, FSSA and CCR) reflective of the final detailed design. In addition, OPG is required to submit to the CNSC fire protection design documentation and a third-party review of the design. This commitment is identified in Appendix D.2 *– Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*, and is related to RHP-1: Installation of the Reactor Building foundation.

Two standardised licence conditions are included in the proposed licence. They are summarised as follows:

- Licence condition 10.1 will require that the licensee implements and maintains an emergency management program in compliance with applicable emergency management regulatory requirements.

- Licence condition 10.2 will require that the licensee maintain and implement a fire protection and response program.

Compliance verification criteria for these licence conditions are included in the draft *Licence Conditions Handbook.*

2.9.2 Discussion

Subsection 4.10, *Emergency Management and Fire Protection*, of REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility* [R1-6] and regulatory document REGDOC-2.10.1 – *Nuclear Emergency Preparedness and Response (version 2)* collectively provide regulatory expectations for emergency preparedness at the licence to construct stage.

A licence application must provide details of the proposed emergency preparedness program, including demonstration of meeting with the expectations outlined in REGDOC-2.10.1 and its associated connections to accident mitigation and management as described in REGDOC-2.3.2 – *Accident Management (version 2)*. Additional guidance on developing an emergency preparedness program can be found in CSA standard N1600 – *General Requirements for Nuclear Emergency Management Programs* [R2.9-2]. Further, the licence application should provide timelines and milestones for emergency preparedness provisions in advance of fuel-in commissioning activities and subsequent operation.

Subsection 4.5.7, *Fire Safety and Fire Protection Systems*, and subsection 4.10.3, *Fire Protection Program*, of REGDOC-1.1.2 collectively provide regulatory expectations specific to fire protection. OPG is expected to provide a fire

protection program that describes how the fire protection activities will be implemented, managed, and monitored during the construction phase to ensure that fire risks are minimised. OPG is also required to describe how the reactor facility's design will address prevention of, protection from, control of, mitigation of, response to, and recovery from fires (including explosions) to protect the SSCs, persons and the environment.

In addition to these requirements, OPG is required to provide sufficient information to demonstrate that the facility design meets the general objectives identified in subsection 7.12, *Fire Safety*, of REGDOC-2.5.2 – *Design of Reactor Facilities* [R1-8]. As outlined by the following codes and standards, OPG must demonstrate that it has conducted a Fire Protection Assessment (FPA) covering Fire Hazard Assessment (FHA), Fire Safe Shutdown Analysis (FSSA) and Code Compliance Review (CCR) for the facility (see subsection A.2.5.12 – *Fire Safety and Fire Protection Systems*), as required.

OPG is also required to ensure an independent third-party review of the design has been completed, focused on an assessment of assesses compliance against the applicable fire codes and standards used in the design for protection from fires and explosions. In addition, the submission should include a Fire Protection Program covering the construction phase as well as the life cycle of the plant. OPG has committed to provide these submissions for CNSC staff review (see Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*).

2.9.2.1 Conventional Emergency Preparedness and Response

To construct a reactor, the licensee must have a set of detailed procedures that would address non-radiological and non-routine conditions and emergencies commensurate with the emergency preparedness program. The LTC application should also include procedures to address emergency situations that have the potential to endanger the safety of workers, the environment, and the public. Specifically, the application should describe the procedures in place to respond to fires, medical emergencies, spills, rescues, or off-site accidents affecting the construction site. The application should also include the details of emergency response organisations, personnel, and equipment to be used to respond to on-site emergencies.

In reviewing OPG's application CNSC staff note that OPG has a memorandum of understanding in place with the Clarington Emergency Fire Service (CFES) to provide emergency response services to the Darlington site. This memorandum of understanding also includes the DNNP site. A response to conventional emergencies at the DNNP site during the construction phase will be provided by CFES.

Contracting companies are also required to issue their own site-specific safety plan (SSSP), designed to meet requirements specified in OPG's emergency response governance. Under the site preparation licence, CNSC staff have

reviewed NK054-PLAN-01210-00034 – *Darlington New Nuclear Project (DNNP) Health and Safety Plan* [R2.6-1] and concluded that OPG has demonstrated assurance to accept the Contractors' SSSPs. These plans shall include provisions for, among other things, fire, medical, and emergency response. OPG is required to review and accept these plans and demonstrate acceptance to the applicable regulatory agencies including the CNSC as part of the construction phase, should a licence be issued.

2.9.2.2 Nuclear Emergency Preparedness and Response

OPG has committed to develop a nuclear emergency preparedness plan that is compliant with the expectations outlined in REGDOC-2.10.1 and will include associated connections to accident mitigation and management provisions from REGDOC-2.3.2. A detailed nuclear emergency preparedness program is not required for the construction phase when no nuclear fuel is present. However, regulatory requirements require the submission of a fully developed program should OPG proceed to the LTO phase. OPG has committed to submitting the program and CNSC staff will continue to monitor the development and implementation of this program under DNNP Commitment D-O-2 *Nuclear Emergency Plan*.

Throughout the construction and the fuel-out commissioning phases, the potential for nuclear and radiological emergencies at the DNNP is a result of any incident from the adjacent Darlington Nuclear Generating Station. OPG's submitted nuclear emergency planning basis for the DNNP consists of two main elements:

The first, is that the DNNP site is co-located within the controlled area of the DNGS, with access restricted by installed fences and signage. The sole exception is the northern portion of the site occupied by the Waterfront Trail and the soccer fields towards the western portion of the site. An emergency response plan is required to ensure that responders can provide an effective response should an emergency occur at the DNGS.

The second, is that the DNNP site will ultimately transition from a construction site to an operational nuclear facility, should this project proceed. This transition will require the DNNP emergency program implementing documentation to be aligned with the corresponding DNGS implementing documentation. OPG submitted the DNNP nuclear emergency preparedness plan, documented in NK054-PLAN-01210-00002 – *DNNP Nuclear Emergency Preparedness Plan*, which describes how OPG will implement the program with the evolution of the site. CNSC staff reviewed the document and concluded it met regulatory requirements.

OPG also has a memorandum of understanding with the Province of Ontario's Emergency Management Ontario (EMO) to revise the *Provincial Nuclear Emergency Response Plan* (PNERP) [R2.9-3] prior to 'fuel-in' commissioning activities. This will include a revised Darlington Implementing Plan, or a separate Implementing Plan specific for the DNNP. This Implementing Plan is intended to

specify the emergency planning zones for the DNNP, and OPG will be required to perform a revised evacuation time estimate study. OPG will be required to have this information available should this project proceed to the LTO stage.

CNSC staff will continue to verify OPG's nuclear emergency preparedness and response program to ensure compliance with applicable regulatory requirements.

2.9.2.3 Fire Emergency Preparedness and Response

2.9.2.3.1 Fire Response

Subsection 4.5.7, *Fire Safety and Fire Protection Systems*, of REGDOC-1.1.2 and subsection 4.10.3, *Fire Protection Program*, of REGDOC-2.5.2 – *Design of Reactor Facilities* collectively provide regulatory expectations specific to fire protection systems and response.

As mentioned in subsection 2.9.2.1 – *Conventional Emergency Preparedness and Response* above, OPG has a memorandum of understanding with the CFES to provide emergency response services to the Darlington site, including the DNNP.

OPG's contract partners are also required to issue its own site-specific safety plan (SSSP), designed to meet requirements specified in OPG's emergency response governance. These plans shall include provisions for, among other things, fire, medical, and emergency response. OPG is required to review and accept these plans and demonstrate acceptance to the applicable regulatory agencies including the CNSC.

CNSC staff's review of the fire protection system documentation is found in subsection A.2.5.12 – *Fire Safety and Fire Protection Systems*.

2.9.3 Key References for this SCA

[R2.9-1] CNSC regulatory document, REGDOC-2.10.1 – *Nuclear Emergency Preparedness and Response*, version 2, published February 2016.

[R2.9-2] CSA group standard, N1600 – *General Requirements for Nuclear Emergency Management Programs*, 2021 edition.

[R2.9-3] Government of Ontario, *Provincial Nuclear Emergency Response Plan (PNERP) Master Plan*, 2017 edition, published December 2017.

2.10 Waste Management

The Waste Management SCA covers internal waste-related programs that form part of the facility's operations, up to the point where the waste is removed from the facility to a separate waste management facility. This SCA also covers the planning for decommissioning of the facility. The specific areas that comprise this SCA at the DNNP include:

- Waste Characterisation
- Waste Minimisation
- Waste Management Practices
- Decommissioning Plans

2.10.1 Regulatory Requirements and CNSC Staff Conclusions

The regulatory foundation for the recommendation(s) associated with Waste Management SCA includes the following:

- The *Nuclear Safety and Control Act*, subsection 24(4)
- The *General Nuclear Safety and Control Regulations*, paragraphs 3(1)(j), 12(1)(c), 12(1)(f)
- The *Class I Nuclear Facilities Regulations*, paragraphs 3(e), 5(j), 5(k)

CNSC staff conclude that OPG has met the regulatory requirements.

The regulatory expectations for the recommendation(s) associated with Waste Management SCA includes the following:

- REGDOC-1.1.2 – *Licence Application Guide: Guide to Construct a Reactor Facility (version 2)*, subsection 4.11
- REGDOC-2.5.2 – *Design of Reactor Facilities (version 1)*, subsection 8.11
- REGDOC-2.11.1 – *Waste Management Volume I: Management of Radioactive Waste (version 1)* [R2.10-1]
- REGDOC-2.11.2 – *Decommissioning (version 1)* [R2.10-2].

OPG maintains a fleet-wide standard, OPG-STD-0156 – *Management of Wastes and Other Environmentally-Regulated Materials* [R2.10-3], that outlines OPG's program for the management of wastes and other environmentally-regulated materials. It provides direction to workers in the handling, processing, shipping, and storage of these materials to ensure compliance with federal, provincial, and municipal regulations as applicable. All hazardous materials used or generated from the proposed BWRX-300 construction activities would be subject to this standard.

OPG has extensive operational experience in the handling, processing, shipping, and storage of hazardous materials across multiple licences covering a variety of regulated activities. These activities include refurbishment where hazardous

materials are used or generated, often by contractors. CNSC staff have assessed OPG's hazardous waste management practices as part of its oversight of the Darlington Nuclear Generating Station. CNSC staff therefore have confidence that where fleet-wide standards covering activities—such as the management of hazardous materials—are applied to BWRX-300 construction activities, that the activity will be managed in a safe manner consistent with regulatory requirements.

Waste management activities during construction primarily encompasses the management of hazardous wastes generated from construction activities and includes requirements to characterise and minimise wastes. OPG has committed to provide detailed information on how hazardous wastes will be managed during construction and address the quantities and characteristics of waste substances prior to the commencement of construction activities. This commitment is outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction.* CNSC staff will review to confirm that OPG demonstrates how its proposed hazardous waste management program for construction will be implemented in compliance with Canadian regulatory requirements, international, and industry best practices for the characterisation and minimisation of hazardous wastes.

CNSC staff have determined that OPG has adequately described the proposed activities for decommissioning the facility. The provided 'as-built' PDP sufficiently describes the end-state, the proposed strategy, the major phases of activity, and anticipated hazards for the decommissioning of the DNNP. OPG has also provided a credible cost estimate for the activities listed in the PDP.

OPG has sufficiently described the activities for decommissioning the 'as-built' facility and has provided a cost estimate to cover the costs incurred for decommissioning the 'as-built' facility. CNSC staff have determined that the provided cost estimate is accurate and meets the expectations outlined in REGDOC-2.11.2.

Should the Commission approve a licence for the construction of the BWRX-300, OPG will be required to update its BWRX-300 waste management plan and the preliminary decommissioning plan, as per the applicable regulatory requirements, to reflect further information on waste streams generated and projected future waste volumes as they become available. CNSC staff will continue to review these plans throughout the construction phase to verify compliance with these regulatory requirements.

OPG has committed to provide this information for CNSC staff review as it becomes available. This commitment is identified under the "Waste Management" SCA in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*, and is related to RHP-1: Installation of the Reactor Building foundation.

Two standardised licence conditions are included in the proposed licence. They are summarised as follows:

- Licence condition 11.1 will require that the licensee implements and maintains a waste management program.

- Licence condition 11.2 will require that the licensee maintains and updates its preliminary decommissioning plans when more information becomes available, or every five years.

Compliance verification criteria for these licence conditions are included in the draft *Licence Conditions Handbook.*

2.10.2 Discussion

OPG is required to implement and maintain a waste management program and a decommissioning plan in accordance with the expectations outlined in regulatory documents REGDOC-2.11.1 and REGDOC-2.11.2.

CNSC staff's assessment throughout this subsection addresses the management of wastes throughout the facility lifecycle, including wastes resulting from construction, operation, and decommissioning activities. Staff's assessment of OPG's licence to construct application and its supporting documentation considered the operation and decommissioning phases, as Class I nuclear facilities must plan for decommissioning throughout the facility's lifecycle, including at the construction phase.

OPG has stated that their current management system will apply to the DNNP during construction activities, including their existing waste management governance programs.

2.10.2.1 Waste Management Practices

Waste management practices include the control of the waste, handling of the waste, minimising the accumulation of waste, the conditioning of the waste (or waste processing), storage, and disposal of the waste. REGDOC-2.11.1 outlines the regulatory expectations for waste management practices.

REGDOC-1.1.2 outlines expectations that an applicant addresses the waste management practices to be taken during construction with specific regard to hazardous wastes. In addition to the management practices to be taken, the applicant also is to address the quantities and characteristics of each substance of waste, as well as their associated list of regulations for the substances that are controlled.

OPG has described the strategies and identified potential future plans for the management of radioactive waste in Chapter 11 of NK054-SR-01210-00001 – *BWRX-300 Preliminary Safety Analysis Report* [R2.4-1] and in NK054-PLAN-03460-00001 – *Solid Radioactive Waste Management Strategy*

(SRWMS) [R2.10-3]. CNSC staff review of the SRWMS noted that it describes the expected future radioactive waste management activities, including a preliminary characterisation of the wastes expected, consistent with the intent of the regulatory requirements.

OPG has committed to provide detailed documentation on management of hazardous wastes to satisfy the expectations outlined in REGDOC-1.1.2 prior to the commencement of construction activities. This commitment is outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

2.10.2.2 Waste Minimisation and Waste Characterisation

Paragraph 3(e) of the *Class I Nuclear Facilities Regulations* require that all applications for licences contain a description of the name, the form, characteristics, and quantities of any hazardous substances that may be on-site while the licensed activity is carried on.

Subsection 4.11 of REGDOC-1.1.2 specifies that an application for a licence to construct address the physical characteristics of each hazardous substance or waste product, as well as outline the procedures for the transport, storage, use, processing, and disposal of each hazardous substance or waste product.

Additionally, REGDOC-2.11.1 outlines expectations for the characterisation and minimisation of radioactive wastes. Characterisation is to include identification of the principal radionuclides relevant to safety, and assurance that the waste or waste package will meet the acceptance criteria for the appropriate management of radioactive wastes. Waste minimisation pertains to the waste management practice of reducing the activity and volume of waste. The licensee should ensure that the generation of radioactive wastes is minimised to the extent practicable.

The OPG information provided describes the future management activities which include the characterisations of the wastes expected to be generated. For activities that would take place during the operations phase, waste characterisation is defined in the *Solid Radioactive Waste Management Strategy* [R2.10-3] as well as Chapter 11 of the *Preliminary Safety Analysis Report* [R2.4-1].

OPG has committed to provide detailed documentation on the characterisation and minimisation of hazardous wastes to satisfy the expectations outlined in REGDOC-1.1.2 and REGDOC-2.11.1 prior to the commencement of construction activities. This commitment is outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

2.10.2.3 Decommissioning Plans

Paragraph 3(k) of the *Class I Nuclear Facilities Regulations* requires any application include a preliminary decommissioning plan (PDP) commensurate with the proposed licensed activities in each phase of the lifecycle of the facility. All licensees are required to maintain a PDP that sets out how the facility will be

decommissioned to an agreed-upon end-state—including, should the project be stopped—restoration of the site to the original condition. The PDP must also be kept current to reflect any changes in the site or facility and provide a credible basis for estimating the decommissioning cost.

In its application for a licence to construct, OPG submitted two PDPs for CNSC staff review:

- NK054-PLAN-00960-00006 – *Preliminary Decommissioning Plan for the Darlington New Nuclear Project As-Built Facility* [R2.10-6], and
- NK054-PLAN-00960-00007 – *Preliminary Decommissioning Plan for the Darlington New Nuclear Project – End of Life* [R2.10-7]

The ‘as-built’ PDP is intended to bring the site from a constructed reactor facility, prior to fuel load, to the agreed-upon end-state (i.e., the restoration of the site to a brown field site). Most on-site facilities, such as the reactor building, switchyard, and intake tunnels, will be decommissioned. OPG states this PDP is intended to satisfy the requirement of paragraph 3(k) of the *Class I Nuclear Facilities Regulations* as applied to a licence to construct.

In the ’as-built’ PDP, OPG states that the end-state of the site is a brown field site, intended to describe industrial-use land having the potential for new industrial uses. OPG also states its intent to retain ownership of the site following decommissioning activities. All DNNP station systems will be dismantled, and buildings demolished, with subsurface structures de-energised and drained. These subsurface features will be dismantled to a nominal depth of one (1) metre below-grade, backfilled with clean fill, graded, with a restoration of vegetation atop the fill.

OPG stated its decommissioning plan is a ‘prompt decommissioning’ approach for the as-built facility and will occur when OPG has made the determination to cease operations of the DNNP. Decommissioning activities are estimated to take approximately six years, using a three-phase approach encompassing preparation for decommissioning, dismantling, and site restoration. The projected costs for decommissioning the as-built facility are estimated to be $167.2 million, in 2022 Canadian dollars.

CNSC staff have assessed the *Preliminary Decommissioning Plan* (PDP) for the DNNP and conclude that it meets the expectations outlined in CSA N294 – *Decommissioning of Facilities Containing Nuclear Substances* [R2.10-5], and CNSC REGDOC-2.11.2 – *Decommissioning*.

The ‘end of life’ PDP corresponds to decommissioning activities occurring after the plant has ceased operations. The submission of an ‘end of life’ PDP is not required for an application for a licence to construct; however, will be required for any subsequent licensing phase, should the project proceed. The buildings identified in this PDP and subject to decommissioning are the same buildings as

described in the ‘as-built’ PDP. As noted in the PDP, OPG will shut the facility down in December 2088.

Similar to the as-built PDP, the end-of-life PDP also includes a three-phase system including preparation for dismantling, dismantling, and site restoration, which is expected to take place over a period of 10 years.

OPG is required to maintain a financial guarantee (FG) that covers the scope of work and activities encompassed by a potential licence to construct. The FG provides an outline of costs associated with decommissioning and returning the site from the conditions expected at the end of a licence to construct to an agreed-upon end state (including, if the project is halted, restoration of the site to an original condition). CNSC staff provide further discussion on the proposed financial guarantee for the licence to construct in subsection 5.2 – *Financial Guarantees*.

2.10.3 Key References for this SCA

[R2.10-1] CNSC Regulatory Document, REGDOC-2.11.1 – *Waste Management Volume I: Management of Radioactive Waste*, version 1, published January 2021.

[R2.10-2] CNSC Regulatory Document, REGDOC-2.11.2 – *Decommissioning*, version 1, published January 2021.

[R2.10-3] OPG document, OPG-STD-0156 – *Management of Wastes and Other Environmentally-Regulated Materials*, revision 3, dated July 2023.

[R2.10-4] OPG document, NK054-PLAN-03460-00001 – *Solid Radioactive Waste Management Strategy*, revision 0, dated February 2023.

[R2.10-5] CSA Group Standard, N294 – *Decommissioning of Facilities Containing Nuclear Substances*, 2019 edition.

[R2.10-6] OPG document, NK054-PLAN-00960-00006 – *Preliminary Decommissioning Plan for the Darlington New Nuclear Project – As-Built*, revision 0.

[R2.10-7] OPG document, NK054-PLAN-00960-00007 – *Preliminary Decommissioning Plan for the Darlington New Nuclear Project – End of Life*, revision 0.

2.11 Security

The Security SCA covers the programs required to implement and support the security requirements stipulated in the regulations, the licence, orders, or expectations for the facility or activity.

The specific areas that comprise this SCA at the DNNP include:

- Facilities and Equipment
- Response Arrangements
- Security Practices
- Cyber Security

2.11.1 Regulatory Requirements and CNSC Staff Conclusions

The regulatory foundation for the recommendation(s) associated with the Security SCA includes the following:

- The *Nuclear Safety and Control Act*, subsection 24(4), paragraph 26(a)
- The *Class I Nuclear Facilities Regulations*, paragraphs 3(a), 3(b), 3(i)
- The *Nuclear Security Regulations* [R2.11-1]
- The *General Nuclear Safety and Control Regulations*, paragraphs 3(1)(d), 3(1)(e), 3(1)(g), 3(1)(h), 12(1)(a), 12(1)(b), 12(1)(c), 12(1)(d), 12(1)(g), 12(1)(h), 12(1)(j), 17(c)(ii)

CNSC staff conclude that OPG has met the regulatory requirements.

The regulatory expectations for the recommendation(s) associated with the Security SCA includes the following:

- REGDOC-1.1.2 – *Licence Application Guide: Guide to Construct a Reactor Facility (version 2)*, subsection 4.12
- REGDOC-2.1.2 – *Safety Culture (version 1)*
- REGDOC-2.5.2 – *Design of Reactor Facilities (version 1)*, subsection 7.22
- REGDOC-2.12.1 – *High-Security Facilities, Volume I: Nuclear Response Force (version 2)*
- REGDOC-2.12.1 – *High-Security Facilities, Volume II: Criteria for Nuclear Security Systems and Devices* (version 1)
- REGDOC-2.13.2 – *Site Access Security Clearance (version 1)*
- REGDOC-2.2.4 – *Fitness for Duty, Volume II: Managing Alcohol and Drug Use (version 3)*
- REGDOC-2.2.4 – *Fitness for Duty, Volume III: Nuclear Security Officer Medical, Physical, and Psychological Fitness (version 1)*

CNSC staff evaluated OPG's submissions against regulatory requirements, including expectations outlined in subsection 4.12 of REGDOC-1.1.2 and applicable CSA standards.

CNSC staff conclude that there are no concerns, from a security or cyber security perspective, with the proposed licensed activities during the construction phase. CNSC staff identified additional detailed information that will be required as the construction activities should the project progress towards a pre-operational state. OPG has committed to developing and updating these documents and providing them for CNSC staff review, prior to consideration of any subsequent licensing phase.

OPG has committed to provide this information for CNSC staff review as it becomes available. These commitments are identified under the "Security" SCA in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*, and are related to RHP-1: Installation of the Reactor Building foundation.

One standardised licence condition is included in the proposed licence. It is summarised as follows:

- Licence condition 12.1 will require that the licensee implements and maintains a security program in compliance with the *Nuclear Security Regulations* and other applicable regulatory requirements.

Compliance verification criteria for this licence condition is included in the draft *Licence Conditions Handbook.*

2.11.2 Discussion

Subsection 4.12, *Security*, of REGDOC-1.1.2 outlines CNSC staff expectations that the application describes a security program that address all measures necessary to protect the facility throughout the construction and commissioning phases of the project.

An application for a licence to construct should provide provisions and information on several security program elements, including threat risk assessments, facilities and equipment, security practices, response arrangements, and security training and qualification. The application should also describe how a cyber security program is designed, implemented, and maintained in accordance with regulatory requirements.

2.11.2.1 Facilities and Equipment

CNSC staff review of OPG's application, and its supporting documentation demonstrates adequate consideration for both security structures and equipment considered within this specific area.

OPG provides a general description of the systems being considered and the proposed configuration. CNSC staff determined that, at this stage of the lifecycle of the facility, these details are sufficient and CNSC staff do not have concerns that would adversely affect the ability for OPG to comply in this area.

CNSC staff note that, since the information provided is a generic description of security-related facilities and equipment, as the project progresses through the construction phase OPG will decide on the specific equipment it intends to install and deploy. CNSC staff will review the specific equipment OPG selects, prior to installation, to ensure it meets the requirements of the *Nuclear Security Regulations* and associated REGDOCs.

Should the Commission issue a construction licence, CNSC staff will conduct compliance oversight activities to evaluate OPG's selected and installed security equipment prior to any authorisation to receive nuclear fuel on the DNNP site.

2.11.2.2 Response Arrangements

OPG's current response arrangements require OPG to conduct routine patrols using its Nuclear Security Officers (NSO), with support from the Durham Region Police Service for off-site response considerations. CNSC staff determined that this is acceptable for construction activities.

OPG also states that its current security program activities and response includes the entire Darlington Nuclear site, which includes the DNNP area. CNSC staff conclude that OPG's current security response activities are consistent with regulatory expectations at the construction stage.

Although not applicable to the proposed licensed activities in the construction phase, CNSC staff have identified some areas of improvement in OPG's tactical response plan as it applies to the DNNP. These areas do not pose a security risk during the proposed construction activities, but CNSC staff will require OPG to perform further analysis prior to procurement and receipt of nuclear materials, and prior to any subsequent stages of licensing. Should the Commission issue a construction licence, CNSC staff will conduct compliance oversight activities to ensure that OPG's tactical response plan will continue to meet regulatory requirements.

2.11.2.3 Security Practices

In its supporting documentation, OPG states that the construction areas will be isolated from access by non-approved persons, through implementing the controlled area boundary that currently is in place on the Darlington Nuclear site. Control of access into the construction areas will remain the responsibility of the contractor partner, whilst OPG has provided overarching guidance to ensure its obligations under the *General Nuclear Safety and Control Regulations* are maintained.

OPG's current security clearance procedural documents also apply to the DNNP site, with contractor staff requiring security clearances if they are performing work on-site unescorted for more than five consecutive days. Contractor or OPG staff requiring access to prescribed information, as defined in the *Nuclear Security Regulations*, will also require OPG site-access security clearance as outlined by REGDOC-2.12.2 – *Site Access Security Clearance* [R2.11-2].

CNSC staff do not expect prescribed equipment to be required for any proposed licensed activities during the construction phase, thereby mitigating the requirement for specific equipment safeguarding security practices. OPG's contractor partners, with support provided by OPG, will be required to conduct periodic assessments to ensure compliance with regulatory requirements, and proactively identify any areas for improvement.

OPG has committed to conduct a search of the Protected Area (PA) for any pre-placed explosives or weapons, including prior to receipt of any nuclear materials and activation of the PA. CNSC staff will evaluate OPG's proposed search methods prior to the activation of the PA to verify that the search will be thoroughly conducted.

2.11.2.4 Cyber Security

Subsection 4.12.2, *Cyber Security*, of REGDOC-1.1.2 outlines CNSC staff expectations regarding how the cyber security program is designed, implemented, and maintained to ensure that digital systems or components are protected from cyber attacks, including both internal and external threats.

CNSC staff note that OPG's application for a licence to construct and supporting documentation provided general information covering how both OPG's and GEH's cyber security programs will manage potential security vulnerabilities throughout the lifecycle of the DNNP.

CNSC staff focused its review on evaluating key elements of both organisations' cyber security programs, listed below, against regulatory expectations.

- The design of the cyber security program
- Cyber security defensive strategy and architecture
- Cyber security system and asset identification and classification
- Cyber security controls
- Cyber security in the supply chain
- Cyber security in lifecycle management of components.

CNSC staff determined that the information provided is adequate for the stage of the design, but also identified the need for additional information in OPG's cyber security programmatic documentation, namely:

- Ensuring adequate provisions for cyber security in the supply chain, and

- Defining a defensive cyber security architecture (DSCA).

CNSC staff and OPG have held multiple discussions on these topics and OPG has submitted additional documentation. The following paragraphs provide a summary of the topics CNSC staff identified.

Ensuring Adequate Provisions for Cyber Security in the Supply Chain

CNSC staff have identified a lack of detailed information in how OPG plans to include provisions to address cyber security threats in the supply chain throughout the lifecycle of the BWRX-300 facility.

To ensure that products do not arrive in a compromised state, OPG has committed to implement a BWRX-300 cyber security procurement control governing document prior to conducting proposed licensed activities. However, should OPG intend to procure assets with functions important to safety, security, emergency preparedness, and safeguards prior to construction activities, CNSC staff expect that cyber security supply chain requirements must be specified. This governance document is intended to specify cyber security procurement requirements for digital equipment products for use in the BWRX-300 facility. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* identifies this commitment.

CNSC staff concluded that OPG's commitment to implement the BWRX-300 Cyber Security Procurement Controls governance document, prior to conducting the proposed licensed activities, is adequate to address cyber security in the supply chain.

Defining a Defensive Cyber Security Architecture (DSCA)

CNSC staff reviewed Chapter 7, *Instrumentation and Control*, of NK054-SR-01210-00001 – *Darlington New Nuclear Project BWRX-300 Preliminary Safety Analysis Report (PSAR)* [R2.4-1] and noted that a general overview of the DSCA specification has been provided.

CNSC staff requested that OPG provide a detailed DSCA specification, based on the defence-in-depth principle and to a sufficient level of detail outlined by CSA N290.7. OPG subsequently provided some additional detail outlining this specification and stated that BWRX-300 defensive cyber security architecture will be in place prior to construction activities.

CNSC staff concluded that the general overview of the DSCA specification is sufficient for this phase of the lifecycle. OPG will be required to provide more detailed DSCA information as construction activities progress, for CNSC staff to determine whether the architecture will meet regulatory requirements. Appendix D.2 identifies this commitment.

CNSC staff concluded that the regulatory requirements have been met. OPG has committed to continuing to provide detailed cyber security design and implementation documentation throughout the construction phase. CNSC staff will review this documentation to ensure that cyber security controls, systems, and components have been designed, manufactured, procured, installed, and commissioned to meet regulatory requirements and standards. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* identifies these commitments.

2.11.3 Key References for this SCA

[R2.11-1] Statutory Orders and Regulations of Canada, *Nuclear Security Regulations*, SOR/2000-209, last amended on 12 June 2015.

[R2.11-2] CNSC regulatory document REGDOC-2.12.2 – *Site Access Security Clearance*, version 1, published April 2013 (contains prescribed information).

[R2.11-3] CSA Group standard, N290.7 – *Cyber Security Requirements for Nuclear Facilities*, 2021 edition.

2.12 Safeguards and Non-Proliferation

The Safeguards and Non-Proliferation SCA covers the programs and activities required for the successful implementation of the obligations arising from the Canada/IAEA Safeguards Agreement, as well as other measures arising from the *Treaty on the Non-Proliferation of Nuclear Weapons* (NPT) [R2.12-1]. This SCA comprises a safeguards program and non-proliferation requirements.

The specific areas that comprise this SCA at the DNNP include:

- Nuclear Material Accountancy and Control
- Access and Assistance to the IAEA
- Operational and Design Information
- Safeguards Equipment, Containment, and Surveillance
- Import and Export

2.12.1 Regulatory Requirements and CNSC Staff Conclusions

The regulatory foundation for the recommendation(s) associated with Safeguards and Non-Proliferation SCA includes the following:

- The international *Treaty on the Non-Proliferation of Nuclear Weapons*
- The *Comprehensive Safeguards Agreement between Canada and the International Atomic Energy Agency*
- The *Nuclear Safety and Control Act*, subsection 24(4), paragraph 26(a)
- The *General Nuclear Safety and Control Regulations*, subsections 3(2), 21(1), 23(2), paragraphs 3(1)(g), 3(1)(h), 12(1)(i), 20(d)
- The *Nuclear Non-proliferation Import and Export Control Regulations*
- The *Class I Nuclear Facilities Regulations*, paragraph 5(h)

CNSC staff conclude that OPG has met the regulatory requirements.

The regulatory expectations for the recommendation(s) associated with Safeguards and Non-Proliferation SCA includes the following:

- REGDOC-1.1.2 – *Licence Application Guide: Guide to Construct a Reactor Facility* (version 2), subsection 4.13
- REGDOC-2.13.1 – *Safeguards and Nuclear Material Accountancy (version 1)* [R2.12-2]
- REGDOC-2.13.2 – *Import and Export (version 2)*

CNSC staff reviewed OPG's application for a licence to construct and determined that, based on the information submitted in the application, OPG has demonstrated it has adequate measures in place to achieve the safeguards and non-proliferation objectives.

Prior to construction activities, OPG has committed to review the safeguards program and revise it if necessary. Additionally, OPG has demonstrated an awareness of and compliance with CNSC import and export licensing requirements for controlled nuclear substances, equipment, and information. OPG currently maintains active Import and Export Licences which authorise the exchange of controlled nuclear information associated with the BWRX-300 reactor technology.

OPG's application for a licence to construct has described considerations and measures taken by OPG to satisfy the regulatory requirements and expectations for the Safeguards and Non-Proliferation SCA. CNSC staff conclude that OPG meets the regulatory requirements related to safeguards as well as import and export controls.

One standardised licence condition is included in the proposed licence. It is summarised as follows:

- Licence condition 13.1 will require that the licensee implements and maintains a safeguards program in compliance with applicable regulatory requirements.

Compliance verification criteria for this licence condition is included in the draft *Licence Conditions Handbook.*

2.12.2 Discussion

Pursuant to the NPT, Canada has entered into a Comprehensive Safeguards Agreement and an Additional Protocol (hereafter referred to as the safeguards agreements) with the International Atomic Energy Agency (IAEA). The objective of the safeguards agreements is for the IAEA to provide annual assurance to Canada and to the international community that all declared nuclear material is in peaceful, non-explosive uses and that there is no indication of undeclared nuclear material.

The CNSC, through the *Nuclear Safety and Control Act*, regulations, and licences, is the authority that implements safeguards requirements in Canada. CNSC regulatory document REGDOC-2.13.1 outlines expectations for safeguards programs for applicant and licensees who possess nuclear material, operate a uranium or thorium mine, carry out specific types of nuclear fuel cycle-related research, or carry out specific types of nuclear-related manufacturing activities. REGDOC-2.13.1 is essential to ensure Canadian compliance with the safeguards agreements entered into with the IAEA and are consistent with modern national and international practices.

The safeguards requirements during the LTC phase include the timely provision of reports on the movement and location of nuclear material (if any); provision of access and assistance to IAEA inspectors for safeguards activities, including complementary access; support for the installation of IAEA equipment; and the

submission of annual operational information, Additional Protocol updates as well as accurate design information.

To be compliant with REGDOC-2.13.1, OPG maintains a safeguards program, N-PROG-RA-0015 – *Safeguards and Nuclear Material Accountancy* [R2.12-3] across all operating nuclear facilities. CNSC staff have regularly verified OPG's implementation of the program against the requirements of REGDOC-2.13.1. In support of this SCA, CNSC staff will use this program to complete their assessment for the DNNP LTC phase activities.

While not all elements of the program are applicable during the LTC phase (e.g., the requirements applicable to nuclear material accountancy), the requirement to provide IAEA inspectors with access and assistance, along with the submission of operational and design information reporting, will be required. Additionally, as part of its LTC licence application, OPG has committed to reviewing and revising its safeguards program prior to the commencement of construction activities to ensure it remains compliant with the requirements of REGDOC 2.13.1. CNSC staff will review OPG's submission to ensure it continues to comply with REGDOC-2.13.1. Overall, CNSC staff conclude that OPG meets the regulatory requirements related to safeguards.

As a party to the NPT as well as other multilateral export control regimes – including the Zangger Committee and Nuclear Suppliers Group – Canada has committed to the implementation of an import and export controls program for certain nuclear and nuclear-related dual-use items. The purpose of this program is to assure the domestic and international communities that Canada's nuclear exports do not contribute to the development of nuclear weapons, in addition to promoting a more effective and comprehensive international nuclear non-proliferation regime. Facilitated by the NSCA and its regulations, the CNSC implements a risk-based licensing program for such imports and exports.

Through this program, the import and export of controlled nuclear substances, equipment and information prescribed by the *Nuclear Non-proliferation Import and Export Control Regulations* (NNIECR) [R2.12-4] requires separate licence authorization from the CNSC, consistent with section 26(a) of the *Nuclear Safety and Control Act* (NSCA) and subsection 3(2) of the *General Nuclear Safety and Control Regulations*. CNSC REGDOC-2.13.2 – *Import and Export (version 2)* [R2.12-5] provides further guidance on obtaining and complying with this type of licence authorisation.

OPG has identified the import and export requirements during the construction phase as primarily related to the exchange of controlled nuclear information pertaining to the BWRX-300 reactor technology from GE Hitachi, which is subject to export controls by both Canadian and United States regulations. To remain compliant with the requirements in subsection 26(a) of the NSCA as well as the NNIECR, OPG maintains a set of Import and Export Licences authorizing

the exchange of such controlled nuclear information with specified international parties.

2.12.2.1 Nuclear Material Accountancy and Control

As per the safeguards program, OPG is required to submit reports supporting nuclear material accountancy obligations. For its current operations, OPG maintains nuclear material accountancy software which provides near real-time inventory information on fresh fuel, irradiated fuel, fuel that is in the reactor, fuel that is located anywhere else in the facility to support operations and other relevant non-fuel nuclear materials (e.g., depleted uranium shielding, radioactive sources). As the proposed licensed activities being conducted during the LTC phase do not include the receipt or handling of nuclear fuel, therefore nuclear material accountancy reporting is not expected.

2.12.2.2 Access and Assistance to the IAEA

The safeguards program outlines the requirements to provide access and assistance to the IAEA for the purposes of performing inspections or technical activities. During the construction phase, the facility will likely not be subject to the IAEA's physical inventory verifications or short-notice or unannounced inspections since the proposed licensed activities do not include the receipt or handling of nuclear fuel.

However, CNSC staff expect the IAEA to perform routine design information verifications, as necessary, once OPG commences construction of this facility. Additionally, the facility will remain subject to complementary access by the IAEA to ensure the absence of undeclared nuclear material or activities during the LTC phase. In its LTC application, OPG has committed to granting the required access and assistance to permit the IAEA to perform for safeguards activities during the LTC phase.

2.12.2.3 Operational and Design Information

As part of its application for a licence to construct, and pursuant to the expectations outlined in REGDOC-2.13.1, OPG has submitted a preliminary Design Information Questionnaire (DIQ) for the proposed new facility. The DIQ contained information pertaining to the new facility's design, operation, locations of nuclear material inventory and nuclear material flow points. OPG has committed to ensure that the IAEA has the required information to permit it to establish safeguards measures. OPG will submit an update to the preliminary design information to the CNSC no later than 270 days before the start of the new facility's construction. Finally, OPG has committed to incorporate all necessary features in the facility design to comply with Canada's obligations arising from the safeguards agreements.

Pursuant to REGDOC-2.13.1, licensees categorised as a "facility" are required to submit an annual operational program to the CNSC covering safeguards-relevant information for the upcoming calendar year, and to update the document as

necessary. The current safeguards program identifies and addresses the requirements for the annual operational program submission. OPG will be required to submit an annual operational program to the CNSC should a construction licence be issued by the Commission, and to provide updates, as necessary.

2.12.2.4 Safeguards Equipment, Containment, and Surveillance

In consultation with the CNSC and OPG, the IAEA is determining the approach for the development and deployment of safeguards equipment, containment, and surveillance for the BWXR-300 in Canada. Each of the IAEA's requests for the installation of safeguards equipment at the licensed site will be done in consultation with OPG. In the LTC application, OPG has committed to providing the IAEA with assistance throughout the LTC phase to permit the installation of safeguards equipment, including remote monitoring and surveillance systems.

OPG has submitted a preliminary design information questionnaire which is currently being used by the IAEA to determine the safeguards elements relevant to safeguards equipment, containment, and surveillance to be installed at DNNP. Recently, CNSC staff have facilitated trilateral meetings between the CNSC, the IAEA and OPG to discuss the development of a safeguards approach for DNNP. CNSC staff will continue to facilitate discussions on any outstanding safeguards items applicable to DNNP and to find appropriate path forward for implementation.

2.12.2.5 Import and Export

As required by section 26(a) of the NSCA as well as the NNIECR, OPG has applied for and obtained several CNSC Import and Export Licences which provide the necessary authorizations to exchange controlled nuclear information pertaining to the BWRX-300 reactor technology with specified international suppliers and consignees. These import and export licence applications are assessed on a case-by-case basis and issued by Designated Officers. Pursuant to the conditions of these licences, and as elaborated within REGDOC-2.13.2, OPG is required to submit reports detailing the transfers which have been conducted pursuant to each licence. The reports are submitted to the issuing Designated Officer on an annual basis and/or at the expiry of the licences.

While OPG has not imported or exported controlled nuclear equipment associated with the construction phase, in its LTC application, OPG commits to apply for the appropriate import/export licences if required in the future, in accordance with REGDOC-2.13.2 and the requirements within the NNIECR.

Additionally, while OPG has stated that the possession, storage, or use of nuclear fuel (which is prescribed as a controlled nuclear substance) is outside the scope of its request for a construction licence, OPG's *Preliminary Safety Analysis Report* [R2.4-1] notes that future import of un-irradiated BWRX-300 fuel will be

conducted in accordance with REGDOC-2.13.2 and the requirements within the NNIECR.

2.12.3 Key References for this SCA

[R2.12-1] IAEA document, *Treaty on the Non-Proliferation of Nuclear Weapons (NPT)*, INFCIRC/140, adopted by Member States in June 1968.

[R2.12-2] CNSC regulatory document, REGDOC-2.13.1 – *Safeguards and Nuclear Material Accountancy*, version 1, published February 2018.

[R2.12-3] OPG document, N-PROG-RA-0015 – *Safeguards and Nuclear Material Accountancy*, revision 10, dated August 2021.

[R2.12-4] Statutory Orders and Regulations of Canada, SOR/2000-2010 – *Nuclear Non-proliferation and Import and Export Control Regulations*, last amended May 2010.

[R2.12-5] CNSC regulatory document, REGDOC-2.13.2 – *Import and Export*, version 2, published April 2018.

3. INDIGENOUS NATIONS AND COMMUNITIES CONSULTATION AND ENGAGEMENT

The common-law Duty to Consult and, where appropriate, Accommodate Indigenous Nations and communities applies when the Crown contemplates actions that may adversely affect potential or established Indigenous and/or treaty rights. The CNSC ensures that all of its licence decisions under the *Nuclear Safety and Control Act* uphold the honour of the Crown and consider Indigenous peoples' potential or established Indigenous and/or treaty rights, pursuant to section 35 of the *Constitution Act, 1982*.

CNSC staff are also committed to building long-term relationships with Indigenous Nations and communities who have the potential to be impacted by, or have interest in, CNSC-regulated facilities within their traditional and/or treaty territories. The CNSC's Indigenous engagement practices include sharing information, discussing topics of interest, seeking feedback and input on CNSC processes, and providing opportunities to participate in environmental monitoring. The CNSC also provides funding support (through the CNSC's Participant Funding Program) for Indigenous peoples to meaningfully participate in Commission proceedings and ongoing regulatory activities.

3.1 Discussion

This section of the CMD summarises the Indigenous consultation and engagement activities conducted to date by CNSC staff and OPG, in relation to the regulatory DNNP licence to construct application. Due to the amount and complexity of the information and collaborative nature of the development of the content of this section, CNSC staff are taking the approach of having a separate report, titled "*CNSC Staff's Indigenous Consultation Report for the Darlington New Nuclear Project Licence to Construct Application*" (hereafter, the "Consultation Report"). Along with CNSC staff's CMD, this report will form part of CNSC staff's submissions and recommendations to the Commission. The information in this section of the CMD provides an overview of the detailed information found in the Consultation Report.

CNSC staff note that potentially impacted or interested Indigenous Nations and communities have been consulted and engaged on the DNNP on an ongoing basis, starting in 2007 and throughout the Environmental Assessment (EA) process. During the EA process, CNSC staff and Canadian Environmental Assessment Agency (CEAA) staff provided many opportunities for Indigenous Nations and communities to submit comments on the project and discuss potential concerns, including any potential impacts on rights. CNSC staff encouraged Indigenous Nations and communities to submit information to the Joint Review Panel (JRP) and to participate in the public hearings. At the time, no project-specific concerns or impacts to rights were identified by Indigenous Nations and communities. The JRP EA indicated that CNSC and CEAA staff concluded that the DNNP was not

likely to result in significant adverse effects on the current use of land and resources for traditional purposes by Indigenous peoples.

CNSC staff acknowledge that consultation requirements and expectations have evolved since the EA was completed, and that several Indigenous Nations and communities have indicated the consultation during the EA was not adequate. CNSC staff note that when the EA was conducted, conclusions were drawn on the assessments completed, and a licence was issued, on the basis that the duty to consult had been adequately discharged.

CNSC staff have considered changes that have occurred in the approach to consultation for the DNNP licence to construct application since the EA. These considerations include the signing of the Williams Treaties First Nation (WTFN) Settlement Agreement in 2018, between the Governments of Canada, Ontario, and the seven Williams Treaties First Nations; the United Nations Declaration on the Rights of Indigenous Peoples Act (UNDA); and the Government of Canada's commitment to reconciliation.

CNSC staff note that the information included in the Consultation Report focuses on the consultation related to the licence to construct application, as that is the decision before the Commission. However, since sending early notification of the expected application in May 2022, consultations and discussions regarding the applicability of the DNNP EA to OPG's chosen reactor technology, the licence to construct application, and topics relevant to other phases of the DNNP have occurred simultaneously. Some Indigenous Nations and communities have raised interests and concerns that go beyond the scope of the licence to construct application. In order to accurately reflect the views, the potential impacts, and concerns of the Indigenous Nations and communities regarding the DNNP in a holistic manner, these details have also been included in the Consultation Report.

CNSC staff have offered and are aiming to work collaboratively with the Mississaugas of Scugog Island First Nation, Curve Lake First Nation, and Hiawatha First Nation on Rights Impacts Assessments (RIA) to ensure there is an understanding of any further potential impacts resulting from the proposed construction activities currently subject to Commission decision.

In order to provide additional time to collaborate and consult with the Indigenous Nations and communities, CNSC staff will be submitting a supplemental report to the Commission in advance of Part 2 of the licence to construct hearing. This supplemental submission will include an update on CNSC staff's consultation activities, RIAs, updated issues tracking tables, OPG's engagement activities, as well as CNSC staff's conclusions and recommendations with regard to the Duty to Consult and, where appropriate, Accommodate. Information will also be included about the outcomes of CNSC staff's efforts to reach a consensus on the project, as well as any concerns and key measures and commitments to address any potential impacts as a result of the licence to construct application.

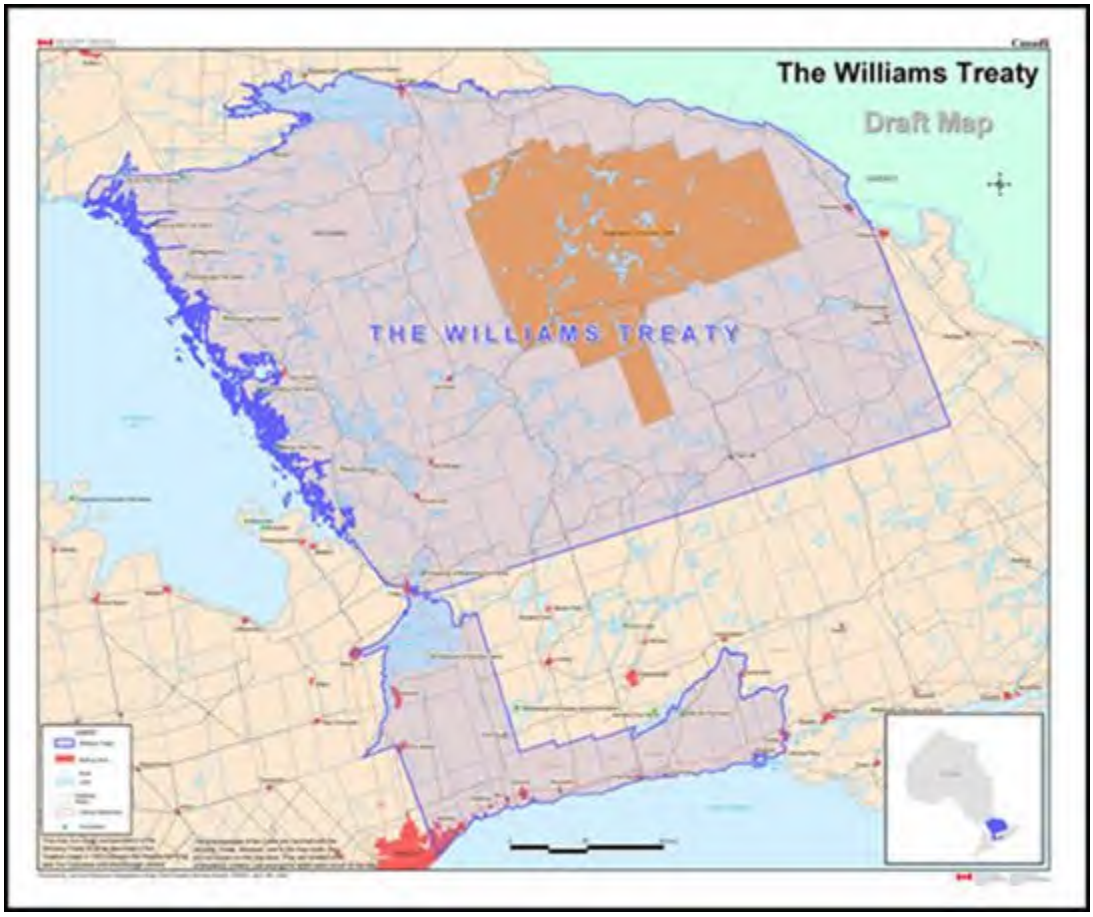
3.1.1 Asserted or Established Indigenous and/or Treaty Rights in the Project Area

As described in subsection 1.1 – *Background* and subsection A.2.1.1 – *Site Location and Topography* in this CMD, the DNNP is proposed to be constructed on the Darlington Nuclear site, on the north shore of Lake Ontario and adjacent to the existing Darlington Nuclear Generating Station, approximately 15 kilometres from Oshawa, Ontario. The DNNP site is located on Michi Saagiig Anishinaabeg lands and waters, within the Williams Treaties territory.

The Williams Treaties First Nations (WTFN) consist of Hiawatha First Nation, Alderville First Nation, Curve Lake First Nation, Beausoleil First Nation, Mississaugas of Scugog Island First Nation, Chippewas of Georgina Island First Nation and Chippewas of Rama First Nation. In 2018, a settlement agreement was reached between the seven First Nations that adhered to the Williams Treaties, and Governments of Canada and Ontario. The settlement agreement formally recognises the pre-existing Treaty harvesting rights of the Williams Treaties Signatories members to hunt, trap, fish and gather for food, social and ceremonial purposes within the portions of their traditional territories covered by Treaties No. 5, 16, 18, 20, and 27-271/4 that lie outside of Clauses 1 and 2 of the Williams Treaties. The Settlement Agreement also included a *Statement of Apology for the Impacts of the 1923 Williams Treaties* for the negative impacts of the 1923 Williams Treaties on the Williams Treaties First Nations.

The lands and waters where the DNNP are located are covered by the Johnson-Butler Purchase, also referred to as the “Gunshot Treaty” (1787-88) and the Williams Treaties (1923) that were subject to the Settlement Agreement. Figure 3-1 includes a map of the territory.

Figure 3-1: The Relative Location of the Williams Treaties (1923)



3.1.2 CNSC Staff-led Consultation Activities with Indigenous Nations and Communities

Based on CNSC staff's assessment of the DNNP, including information provided by Indigenous Nations and communities and OPG, CNSC staff determined that OPG's application for a licence to construct a reactor facility required a Duty to Consult and, where appropriate, Accommodate, potentially affected Indigenous Nations and communities.

CNSC staff identified the following Indigenous Nations and communities who have Indigenous and/or Treaty rights in the area where the DNNP is proposed:

- Alderville First Nation
- Curve Lake First Nation
- Hiawatha First Nation
- Mississaugas of Scugog Island First Nation
- Beausoleil First Nation
- Chippewas of Georgina Island First Nation
- Chippewas of Rama First Nation.

In addition, CNSC staff have identified the following Indigenous Nations and communities that have expressed an interest in the DNNP:

- Saugeen Ojibway Nation
- Mohawks of the Bay of Quinte
- Métis Nation of Ontario
- Six Nations of the Grand River.

In order to fulfill the CNSC's consultation obligations for the decision under the *Nuclear Safety and Control Act* regarding the DNNP licence to construct application, CNSC staff sent early notification of the expected licence to construct application in May 2022. Since that time, CNSC staff have aimed to conduct a thorough, transparent, flexible, and collaborative consultation and regulatory process for the DNNP. CNSC staff provided multiple opportunities for dialogue and collaboration with Indigenous Nations and communities about their concerns and interests related to the licence to construct application through multiple phone calls, correspondence, regular meetings with leadership and community representatives, as well as through the provision of funding and capacity support. CNSC staff have also encouraged the identified Indigenous Nations and communities to participate in the Commission's public hearing process to advise the Commission of any concerns they may have and propose resolutions to those concerns. Additional information about the specific consultation and engagement activities with each identified Indigenous Nation and community can be found in Section 7 of the Consultation Report.

CNSC staff provided regular updates to each identified Indigenous Nation and community as part of its consultation efforts, to keep them informed of key developments and to solicit their feedback and perspectives on the DNNP, the potential impacts to Indigenous and/or Treaty Rights, as well as the regulatory review and consultation processes. CNSC staff offered opportunities for a collaborative approach to reviewing and commenting on relevant sections of the Consultation Report, including the issues tracking tables. CNSC staff have offered and are aiming to collaboratively draft project-specific RIA reports. Additional information regarding the RIA process, including concerns raised by Curve Lake First Nation, Hiawatha First Nation, and the Mississaugas of Scugog Island First Nation is included in the Consultation Report.

CNSC staff have also been consulting and engaging with the identified Indigenous Nations and communities on an ongoing basis concerning nuclear projects and activities at the Darlington site, and have Terms of Reference (TOR) in place for long-term engagement with several of the identified Indigenous Nations and communities—including with Hiawatha First Nation (signed in 2023), Curve Lake First Nation (signed in 2021), the Mississaugas of Scugog Island First Nation (signed in 2022), the Saugeen Ojibway Nation (signed in 2019), and the Métis Nation of Ontario (signed in 2019). These TORs provide for a forum of collaboration and a structure for regular meetings and dialogue to

address areas of interest of concern regarding CNSC-regulated facilities and activities, including the DNNP.

During these recurring meetings, CNSC staff provided updates specific to the DNNP and the licence to construct application, and had discussions regarding interests, concerns, and potential impacts on Indigenous and/or Treaty Rights in relation to the application. CNSC staff have offered to hold, and have held, multiple DNNP-specific meetings to discuss issues of concern, and to collaborate proactively on an approach to consultation and engagement for the DNNP.

3.1.3 Engagement Led by OPG

CNSC regulatory document REGDOC 3.2.2 – *Indigenous Engagement* sets out requirements and guidance for licensees whose projects may raise the Crown's duty to consult. While the Crown cannot delegate the Duty to Consult and is ultimately responsible for ensuring the discharge of the Duty to Consult and, where appropriate, Accommodate, is fulfilled, the Commission can consider the engagement undertaken by OPG when determining whether consultation has been adequate. The information collected by OPG, including measures proposed by OPG to avoid, mitigate, or offset potential adverse impacts from the DNNP are used to support the CNSC in meeting its consultation obligations.

CNSC staff have determined that REGDOC-3.2.2 applies to the DNNP licence to construct application. OPG has submitted multiple updates to their engagement report, covering the period between April 2020 and November 2023. CNSC staff have reviewed each version of the report and will continue to monitor and assess OPG's engagement activities throughout the regulatory review process. As per the Commission's *Record of Decision* [R1-4], the Commission expect OPG to produce an up-to-date engagement report, to be filed on the record of the public hearing regarding the Licence to Construct application, including status updates regarding progress in relation to the study and assessments.

CNSC staff note that OPG has been engaging the identified Indigenous Nations and communities by holding meetings, hosting open houses, conducting workshops, site visits and ceremonies, sharing newsletters, and discussing issues and concerns and potential options to mitigate and address the concerns raised to date. OPG has offered capacity funding agreements to assist Indigenous Nations and communities in their engagement with OPG, where appropriate. CNSC staff recognise that OPG has long-standing relationships and engagement protocols with many of the identified Indigenous Nations and communities.

OPG continues to work to support and maintain relationships with Indigenous Nations and communities and is working to address items of concern and requests related to the DNNP. CNSC staff encourage OPG to continue to discuss issues and concerns raised by Indigenous Nations and communities, including the proposed mitigation measures and commitments, to address any potential impacts to Indigenous and/or Treaty Rights, as appropriate. CNSC staff's final conclusions and assessment on OPG's engagement related to the DNNP licence to

construct application will be included as part of the supplemental submission prior to Part 2 of the hearing.

3.1.4 Summary and Conclusions

CNSC staff have aimed to conduct a thorough, transparent, flexible, and collaborative consultation and regulatory process for the DNNP licence to construct application. All identified Indigenous Nations and communities were provided with multiple opportunities to participate in the regulatory review and consultation process and funding was offered to support their participation. Indigenous Nations and communities who have raised issues and concerns related to the DNNP were offered opportunities to collaboratively develop sections of the Consultation Report and issues tracking tables.

CNSC staff will continue to monitor and assess OPG's engagement activities throughout the regulatory review process as per REGDOC-3.2.2, and staff's conclusions and assessment on OPG's engagement related to the DNNP Licence to Construct application will be included in the supplemental submission prior to Part 2 of the hearing.

An update on consultation efforts with all identified Indigenous Nations and communities, as well as updated issues tracking tables, will be submitted to the Commission as part of CNSC staff's supplemental submission as part of the public record for the DNNP in advance of Part 2 of the hearing.

Additionally, CNSC staff continue to offer and aim to work collaboratively in consultation with the Mississaugas of Scugog Island First Nation, Curve Lake First Nation, and Hiawatha First Nation on project-specific Rights Impact Assessments. The reports will include CNSC staffs' and the Indigenous Nations' views on potential impacts to Indigenous and/or Treaty Rights, as well as mitigation and/or accommodation measures to address any identified impacts. These reports will be included in CNSC staff's supplemental submission.

The RIAs, issues and concerns tables and additional consultation activities, including collaborative efforts with each potentially impacted Indigenous Nation or community with regards to identifying, and agreeing to specific measures and commitments to address identified concerns and impacts to Rights and interests to the greatest extent possible, will help to inform CNSC staff's conclusions and recommendations to the Commission with regards to the adequacy of consultation and engagement for the DNNP Licence to Construct application. CNSC staff will involve OPG in these discussions and consultation as appropriate.

CNSC staff's conclusions and recommendations with regards to consultation and impacts to Indigenous and/or Treaty Rights will be provided as part of the supplemental submission, prior to Part 2 of the licence to construct application hearing.

3.2 Participant Funding Program

The CNSC established the Participant Funding Program (PFP) in 2011 to:

- enhance individual, not-for-profit organization and Indigenous Nations and Communities participation in the CNSC's environmental assessment (EA) and licensing processes for major nuclear facilities (e.g., uranium mines, nuclear power plants, nuclear substance processing, or nuclear waste facilities)
- assist individuals, not-for-profit organizations and Indigenous Nations and Communities to bring value-added information to the Commission through informed and topic-specific interventions related to EAs and licensing (i.e., new, distinctive, and relevant information that contributes to a better understanding of the anticipated effects of a project)

3.2.1 Discussion

To date, the CNSC has offered three stages of participant funding to support Indigenous Nations and communities, members of the public, and participation in the regulatory process for the DNNP.

As documented in CMD 24-H2 [R1-2], stages 1 and 2 of the participant funding for this project were provided to assist Indigenous Nations and communities and members of the public in reviewing documentation related to the applicability of the DNNP Environmental Assessment to the BWRX-300 reactor. These opportunities did not include a review of OPG's application for a licence to construct, and are therefore not included in this CMD.

Stage 3: Participant funding for review of Ontario Power Generation's application for a licence to construct (Darlington New Nuclear Project)

The CNSC made an additional $150,000 available in a third round of participant funding to assist members of the public, Indigenous Nations and communities, and interested parties in reviewing the application from OPG for a licence to construct for the DNNP, as well as to assist in the review of related documentation, and to support participation in a potential public hearing. This funding opportunity was open from 10 October to 08 December 2023. CNSC staff opened this funding opportunity prior to the Commission's decision on the applicability of the EA in order to ensure that Indigenous Nations and communities, the public, and interested parties had a reasonable amount of time to review the application and relevant supporting documentation, should the Commission determine the EA was applicable. Any funding awarded to support participation in a potential public hearing was dependent on the outcome of the Commission's decision.

If the Commission determined that the technology was fundamentally different and that a new EA was required, the Commission would not have proceeded with the consideration of OPG's application for a Licence to Construct. In this case,

any funding allocated to participation in the hearing would have been held back; however, participants would have been compensated for any work completed in relation to reviewing the application prior to the Commission's decision.

Based on recommendations from the Funding Review Committee, the CNSC awarded a total of $191,863.98 in participant funding to the following recipients:

Table 3-1: CNSC Approved Participant Funding for Stage 3 of the DNNP Licence to Construct Project

Applicant	CNSC Approved Funding
Saugeen Ojibway Nation	$22,975.80
Mississaugas of Scugog Island First Nation	$26,099.58
Nuclear Transparency Project	$13,250.00
Canadian Coalition for Nuclear Responsibility	$17,020.00
Canadian Environmental Law Association	$17,800.00
Northwatch	$23,033.00
Curve Lake First Nation	$15,779.72
Hiawatha First Nation	$26,015.88
Métis Nation of Ontario	$19,140.00
Mr. Paul Sedran	$3,000.00
Chippewas of Georgina Island First Nation	$7,750.00
Total Funding	**$191,863.98**

3.2.2 Conclusion

The CNSC has offered support to interested members of the public, Indigenous Nations and communities, and other stakeholders, through the PFP, to prepare for and participate in the regulatory process and Commission proceeding(s) for the DNNP.

3.3 Key References

[R3-1] CNSC regulatory document, REGDOC-3.2.2 – *Indigenous Engagement*, version 1.2, published February 2022.

[R3-2] CNSC summary report, *Workshop summary: Public consultation on OPG's chosen technology for its proposed Darlington New Nuclear Project*.

4. PUBLIC ENGAGEMENT AND DISCLOSURE

4.1 CNSC Public Engagement

The *Nuclear Safety and Control Act* mandates the CNSC to disseminate objective scientific, technical and regulatory information to the public concerning its activities and the activities it regulates. CNSC staff fulfill this mandate in a variety of ways, including hosting in-person and virtual information sessions and through annual regulatory reports.

4.1.1 Discussion

Paragraph 3(1)(j) of the *Class I Nuclear Facilities Regulations* requires that "an application for a licence shall contain a description of the proposed program to inform persons living in the vicinity of the site of the general nature and characteristics of the anticipated effects on the environment, and on the health and safety of persons that may result from the activity to be licensed." Expectations surrounding public information and disclosure are outlined in REGDOC-3.2.1 – *Public Information and Disclosure*.

CNSC staff have held several, webinars, meetings, and a public information session to provide updates on the Darlington New Nuclear Project (DNNP) licensing review process since 2022. CNSC staff also leveraged our social media channels (LinkedIn, Facebook, Twitter/X) and updated the DNNP facility webpage on our website to ensure information was easily accessible and available.

CNSC staff informed the public of the submission of OPG's LTC application and made all publicly available documents submitted by OPG, and exchanged between OPG and CNSC, available upon request, with a list of these documents posted on the Government of Canada's DNNP Open Government website. The DNNP Open Government website launched in December 2022 and continues to be updated as required.

The CNSC also communicated information about the regulatory process to the public and stakeholders through various methods including graphics on the CNSC website, e-mails to subscribers, a mail drop, public webinars, and through social media.

4.1.2 Conclusion

CNSC staff conducted early and ongoing engagement activities with members of the public and stakeholders, to encourage their participation in the licensing regulatory processes. During these activities, CNSC staff ensured participants' concerns were heard and considered. When necessary, CNSC staff ensured meaningful follow-up was completed by OPG and CNSC staff.

CNSC staff's view is that the ongoing engagement activities have been thorough, responsive, and flexible. CNSC staff are committed to continuing to engage with the public and stakeholders in relation to the DNNP.

4.2 Licensee Public Information and Disclosure

A Public Information and Disclosure Program (PIDP) is a regulatory requirement for licence applicants and licensees of Class I nuclear facilities, uranium mines and mills and certain Class II nuclear facilities. These expectations are found in REGDOC-3.2.1.

The primary goal of the PIDP is to ensure that information related to the health, safety and security of persons and the environment, and other issues associated with the lifecycle of nuclear facilities are effectively communicated to the public. The program must include a commitment to, and protocol for ongoing, timely communication of information related to the licensed facility during the licence period.

CNSC's expectations of a licensee's public information program and disclosure protocol are commensurate with the level of risk of the facility, as well as the level of public interest in the licensed activities. The program and protocol may be further influenced by the complexity of the nuclear facility's lifecycle and activities, and the risks to public health and safety and the environment perceived to be associated with the facility and activities.

4.2.1 Discussion

OPG provided a *DNNP Stakeholder Engagement Plan*, enclosed with a supplemental submission to the licence to construct application, NK054-CORR-00531-10735 – *DNNP Submission of Work Package #1 Management Aspects Deliverables in Support of the Licence to Construct Application for the CNSC Review* [R4-1].

CNSC staff conducted a technical assessment of OPG's *DNNP Stakeholder Engagement Plan* [R4-1] based on the expectations outlined in REGDOC-3.2.1.

OPG states the following when referring to a PIDP for DNNP:

> "*All communications and outreach activities in support of the project will be integrated into the framework of the existing public information program for the Darlington Nuclear generating station.*"

CNSC staff note that OPG has a valid Public Information and Disclosure Program document (*Nuclear Public Information Disclosure* [R4-2]).

In July 2023, CNSC staff completed a fleetwide Desktop Inspection on OPG's Public Information and Disclosure Program [R4-3] and concluded that OPG was compliant with the public disclosure protocol requirements of CNSC's REGDOC-3.2.1.

OPG's *DNNP Stakeholder Engagement Plan* indicates the following about DNNP specific activities:

> "*Where necessary, Darlington's existing public information program will be augmented to include activities and/or stakeholders not usually within the scope of the existing program, specific to DNNP.*"

At the time of this review, no modifications specific to the existing PIDP have been made. CNSC staff will continue to reference OPG's existing and valid PIDP document and monitor future updates for activities specific to DNNP. It's important to note that REGDOC-3.2.1 doesn't specify the requirement for unique PIDPs for separate licence facilities co-located on a common site.

Since the DNNP is a proposed facility, there is an expectation for the proponent's PIDP to reflect the new facility. The CNSC recommends that OPG considers adding details about how OPG will communicate DNNP-specific information with defined target audiences to their existing fleetwide PIDP.

4.2.2 Conclusion

CNSC staff do not have any concerns with the *DNNP Stakeholder Engagement Plan*.

One standardised licence condition is included in the proposed licence. It is summarised as follows:

- Licence condition G.6 will require that the licensee implements and maintains a public information and disclosure program in compliance with applicable regulatory requirements.

Compliance verification criteria for this licence condition is included in the draft *Licence Conditions Handbook*.

4.3 Key References

[R4-1] OPG document, *DNNP – Submission of Package #1 Management Aspects Deliverables in Support of the Licence to Construct Application for the CNSC Review*, submitted as NK054-CORR-00531-10735, dated October 2022.

[R4-2] OPG document, N-STD-AS-0013 – *Nuclear Public Information Disclosure*, dated November 2020.

[R4-3] CNSC Desktop Inspection on OPG's Public Information and Disclosure Program, July 2023.

5. OTHER MATTERS OF REGULATORY INTEREST

5.1 Cost Recovery

Paragraph 24(2)(c) of the *Nuclear Safety and Control Act* requires that a licence application is accompanied by the prescribed fee. The *CNSC Cost Recovery Fees Regulations* (CRFR) set out the specific requirements based on the activities to be licensed. An applicant for a Class I facility licence is subject to Part 2 of CRFR, which is based on Regulatory Activity Plan fees.

Through a review of CNSC records, CNSC staff have determined that OPG is in good standing with respect to the *Cost Recovery Fees Regulations* requirements for the DNNP. As this is an initial application for a new licence, OPG has paid the $25,000 (CDN) fee, as prescribed by paragraph 7(1)(a) of the *Cost Recovery Fees Regulations*. OPG has paid their cost recovery fees in full.

Through a review of CNSC records, CNSC staff conclude that OPG is in good standing with respect to the *Cost Recovery Fees Regulations* requirements for the DNNP. Based on OPG's payment history, CNSC staff do not have concerns regarding the payment of future cost recovery fees.

No licence condition is required for this matter.

5.2 Financial Guarantees

Subsection 24(5) of the *Nuclear Safety and Control Act* requires a licensee provide a financial guarantee (FG) in a form that is acceptable to the Commission. Paragraph 3(1)(l) of the *General Nuclear Safety and Control Regulations* requires that "an application for a licence shall contain a description of any proposed financial guarantee related to the activity for which a licence application is submitted." The financial guarantee for decommissioning is established to fund the activities described in the Preliminary Decommissioning Plan (PDP). These expectations are outlined in REGDOC-3.3.1 – *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities*.

OPG's application for a licence to construct included a FG established to fund the proposed decommissioning activities and strategy outlined in NK054-PLAN-00960-00006 – *Preliminary Decommissioning Plan for the Darlington New Nuclear Project – As-Built* [R2.10-6].

OPG's proposed FG states the amount to bring the DNNP site from a pre-fuelled state to a brown field site is set at $167,180,000 in 2022 Canadian dollars. OPG proposed a *Letter of Credit* as the legal instrument to secure this funding, to which the CNSC is the beneficiary. CNSC staff note that this guarantee is distinct from OPG's consolidated financial guarantee, which covers the existing DNGS and Waste Management Facilities. CNSC staff confirmed OPG's proposed financial guarantee, for purposes of decommissioning the DNNP, is sufficient to cover the proposed activities during the construction phase.

CNSC staff recommend the Commission accept OPG's PDP and associated FG.

One standardised licence condition is included in the proposed licence. It is summarised as follows:

- Licence condition G.5 will require that the licensee maintains a financial guarantee, satisfactory to the Commission, including a cost estimate commensurate with the proposed activities that reflects the costs to decommission and remediate the site to its designated condition.

Compliance verification criteria for this licence condition is included in the draft *Licence Conditions Handbook*.

5.3 Nuclear Liability Insurance

Pursuant to section 7 of the *Nuclear Liability and Compensation Act* (NLCA) [R5-1], which came into force on January 1, 2017, and previously under the *Nuclear Liability Act*, licensees are required to maintain nuclear liability insurance for designated nuclear installations. The NLCA is administered by Natural Resources Canada (NRCan).

The DNNP is not covered under the NLCA during the construction phase as there is no nuclear fuel on site. NRCan will continue its assessment regarding the risk characterisation of the DNNP and the BWRX-300 reactor, as the NLCA would apply if the project proceeds and if the Commission issues OPG a Power Reactor Operating Licence.

CNSC staff are not requesting a Commission determination on this matter, and therefore no licence condition is required.

5.4 Delegation of Authority

The Commission may include in a licence any condition it considers necessary for the purposes of the NSCA. The Commission may delegate authority to CNSC staff with respect to the administration of licence conditions, or portions thereof.

There is one (1) proposed licence condition in the enclosed proposed Power Reactor Construction Licence that contain the phrase "the Commission or a person authorized by the Commission":

- LC 15.3 (Removal of Regulatory Hold Points). The licensee shall obtain the approval of the Commission, or the consent of a person authorized by the Commission, prior to the removal of established regulatory points.

Prior to releasing a regulatory hold point, CNSC staff will verify compliance and provide a report to the Executive Vice President and Chief Regulatory Operations Officer, who will review the report and if satisfied, lift the regulatory hold point and provide notice to the licensee, the public, and Indigenous Nations and communities.

With respect to the removal of regulatory hold points, as further described in this CMD, CNSC staff recommend that the Commission delegate the authority to remove regulatory hold points for the construction of the BWRX-300 to the following staff:

- Executive Vice-President and Chief Regulatory Officer, Regulatory Operations Branch.

5.5 Key References

[R5-1] Statutes of Canada, *Nuclear Liability and Compensation Act*, S.C. 2015, c.4, in force as of 01 January 2017.

6. OVERALL CONCLUSIONS AND RECOMMENDATIONS

6.1 Overall Conclusions

CNSC staff have assessed OPG's licence application, including the preliminary design information, and conclude that it is sufficient to recommend the Commission issue a licence to construct.

As outlined in the proposed licence and the draft *Licence Conditions Handbook*, OPG will be required to provide additional information prior to the removal of the regulatory hold points. These commitments are detailed throughout this CMD, and are summarised in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*. CNSC staff reviewed OPG's request for a 10-year licence to construct period and determined that the period requested was adequately substantiated.

A summary of CNSC staff's consultation and engagement activities to date is provided in section 3 – *Indigenous Nations and Communities Consultation and Engagement*; however, full details are provided in *CNSC Staff's Indigenous Consultation Report*, accompanying this CMD.

In addition, CNSC staff's recommendations on the Duty to Consult and, where appropriate, Accommodate will be included in a supplemental submission from CNSC staff to the Commission, on the public record prior to Part 2 of the Licence to Construct public hearing. The recommendations will be based on the outcomes of additional consultation efforts and Rights Impact Assessments, with collaboration and input from the potentially impacted Indigenous Nations and communities.

CNSC staff reviewed OPG's preliminary decommissioning plan (PDP) and confirmed that it met applicable regulatory requirements. CNSC staff reviewed the associated financial guarantee and confirmed that adequate funds are available to cover decommissioning costs outlined in the PDP.

6.2 Overall Recommendations

The regulatory bases for the recommendations are provided throughout this CMD. The technical bases for CNSC staff's recommendations are provided in Appendix B.1 – *Technical Basis*.

CNSC staff recommend the Commission, once satisfied that the Duty to Consult has been adequately discharged:

1. **Conclude**, pursuant to paragraphs 24(4)(a) and (b) of the *Nuclear Safety and Control Act* (NSCA) in that the applicant:

    c) Is qualified to carry on the activities authorised by the licence.

    d) Will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

2. **Authorise** OPG to construct a single BWRX-300 reactor at the DNNP site, subject to the conditions with which OPG must comply, as articulated in the proposed construction licence and draft proposed accompanying *Licence Conditions Handbook*.

3. **Issue** the proposed PRCL 32.00/2035.

4. **Accept** OPG's Preliminary Decommissioning Plan and associated Financial Guarantee.

5. **Delegate** authority to the Executive Vice President and Chief Regulatory Operations Officer (EVP-CROO) for the administration of the regulatory hold points, as set out in section 5.4.

6. **Determine** whether, taking into consideration the information provided in this CMD and any other relevant information forthcoming, the CNSC, as an agent of the Crown, has upheld the honour of the Crown and fulfilled its obligations to consult and, where appropriate, accommodate Indigenous peoples, pursuant to section 35 of the *Constitution Act, 1982*.

Should the Commission accept CNSC staff's recommendations, CNSC staff will issue the DNNP *Licence Conditions Handbook*, as specified in Part 2.

REFERENCES

CNSC staff reviewed a substantial number of documents in the review of OPG's application for a Licence to Construct. Documents that are specific to staff's review of the application in a Safety and Control Area or Specific Area are provided in the respective section and are referenced using the "R*x.y-#*" numbering format, corresponding to the section number of the respective Safety and Control Area.

References appearing in this list are applicable regulatory requirements or are those that provide common requirements or expectations across multiple areas of CNSC staff's review.

[R1-1] CNSC Licence, *Nuclear Power Reactor Site Preparation Licence for Ontario Power Generation New Nuclear at Darlington Generating Station*, PSRL 18.00/2031, effective date 12 October 2021, valid until October 2031.

[R1-2] CNSC Commission Member Document, *CNSC Staff Review and Assessment of the Applicability of the DNNP Environmental Assessment to OPG's Selection of the General Electric Hitachi BWRX-300 Reactor*, CMD 24-H2, published in September 2023.

[R1-3] CNSC Commission document, *Record of Decision – Ontario Power Generation – Application to Renew the Power Reactor Site Preparation Licence for the Darlington New Nuclear Project*, issued 12 October 2021.

[R1-4] CNSC Commission document, *Record of Decision – Ontario Power Generation – Applicability of the BWRX-300 Reactor to the DNNP Environmental Assessment*, dated April 2024.

[R1-5] CNSC Commission Member Document, *Presentation from CNSC Staff – Regulatory Readiness – Small Modular Reactor Projects*, CMD 21-M5, dated January 2021.

[R1-6] OPG report, *Darlington New Nuclear Project Commitments Report*, OPG document number NK054-REP-01210-00078, revision 9, dated November 2023.

[R1-7] CNSC Regulatory Document, REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility*, version 2, published October 2022.

[R1-8] CNSC Regulatory Document, REGDOC-2.5.2 – *Design of Reactor Facilities*, version 1, published in 2014.

[R1-9] General Electric Hitachi (GEH) document, 005N9751 – *BWRX-300 General Description*, revision F, dated December 2023.

GLOSSARY

For definitions of terms used in this document, see *REGDOC-3.6, Glossary of CNSC Terminology*, which includes terms and definitions used in the *Nuclear Safety and Control Act* and the *Regulations* made under it, and in *CNSC regulatory documents* and other publications.

Additional terms and acronyms used in this CMD are listed below.

AC	Alternating Current
ADDAM	Atmospheric Dispersion and Dose Analysis Method (Computer Code)
AOO	Anticipated Operational Occurrence
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
BATEA	Best-Available Technology and Techniques Economically Achievable
BDBA	Beyond Design Basis Accident
BIS	Boron Injection System (BWRX-300 System)
BOP	Balance of Plant
BPVC	*Boiler and Pressure Vessel Code* (ASME)
BWR	Boiling Water Reactor
C1NFR	*Class I Nuclear Facilities Regulations*
CB	Control Building
CEAA	*Canadian Environmental Assessment Act (1992)*
CCR	Code Compliance Review
CCW	Condenser Cooling Water
CDF	Core Damage Frequency
CFD	Condensate Filter and Demineraliser System (BWRX-300 System)
CFR	Code of Federal Regulations (United States)
CFS	Condensate and Feedwater System (BWRX-300 System)
CFW	Condensate and Feedwater System (BWRX-300 System)
CGD	Canadian Geodetic Datum
CIC	Chemical and Inventory Control System (BWRX-300 System)
CIS	Containment Inerting System (BWRX-300 System)
CIV	Containment Isolation Valve
CLFN	Curve Lake First Nation
CN-AOO	Conservative Anticipated Operational Occurrence DSA Analysis

CN-DBA	Conservative Design-Basis Accident DSA Analysis
CNSC	Canadian Nuclear Safety Commission
COIR	Contractor/Owner Interface Requirements
COPC	Contaminants of Potential Concern
CPR	Critical Power Ratio
CR	Control Rod
CRD	Control Rod Drive System (BWRX-300 System)
CSA	Canadian Standards Association
CSAU	Code Scaling, Applicability, and Uncertainty Analysis
CST	Condensate Storage Tank (BWRX-300 Component)
CUW	Reactor Clean-Up Water System (BWRX-300 System)
CWE	Chilled Water Equipment System (BWRX-300 Auxiliary System)
CWP	Comprehensive Work Package
D-RAP	Design Reliability Assurance Program
DBA	Design Basis Accident
DBE	Design Basis Earthquake
DC	Direct Current
DCIS	Distributed Control and Information System (BWRX-300 System)
DEC	Design Extension Condition
DID	Defence in Depth
DN	Darlington Nuclear
DNGS	Darlington Nuclear Generating Station
DNNP	Darlington New Nuclear Project
DP-SC	Steel-Plate Composite Modules with Diaphragm Plates
DSA	Deterministic Safety Analysis
DWMF	Darlington Waste Management Facility
EA	Environmental Assessment
ECC	Emergency Core Cooling
ECCC	Environment and Climate Change Canada
EFS	Equipment and Floor Drain System (BWRX-300 System)
EHC	Electrohydraulic Controls System (BWRX-300 System)
EMEAF	Environmental Monitoring and Environmental Assessment Follow-Up
EME	Emergency Mitigating Equipment

ESBWR	Economic Simplified Boiling Water Reactor
EQ	Equipment Environmental Qualification
FA	*Fisheries Act*
FAC	Flow-Accelerated Corrosion
FCISL	Fuel Cladding Integrity Safety Limit
FFS	Fitness for Service
FG	Financial Guarantee
FHA	Fire Hazard Assessment
FHS	Fuel Handling and Storage (BWRX-300 System)
FME	Foreign Material Exclusion
FSAR	Final Safety Analysis Report
FSSA	Fire-Safe Shutdown Assessment
GEH	General Electric Hitachi
GNF2	Global Nuclear Fuel Mk. 2 (GEH Fuel Design)
GNSCR	*General Nuclear Safety and Control Regulations*
GOTHIC	Generation of Thermal-Hydraulic Information for Containment (Computer Code)
HCU	Hydraulic Control Units (BWRX-300 component)
HEL	High-Energy Line
HFE	Human Factors Engineering
HFN	Hiawatha First Nation
HVAC	Heating, Ventilation, and Air Conditioning
HVS	Heating, Ventilation and Air Condition System (BWRX-300 System)
HX	Heat Exchanger
IAA	*Impact Assessment Act*
IAEA	International Atomic Energy Agency
I&C	Instrumentation and Control
ICC	Isolation Condenser System Pool Cleaning and Clean-Up System (BWRX-300 Auxiliary System)
ICS	Isolation Condenser System (BWRX-300 system)
IGSCC	Intergranular Stress Corrosion Cracking
INSAG	International Nuclear Safety Advisory Group
IPD	Integrated Project Delivery

ISFSI	Independent Spent Fuel Storage Installation
LBB	Leak-before-Break
LCH	Licence Conditions Handbook
LFWH	Loss of Feedwater Heating (Anticipated Operational Occurrence)
LOCA	Loss-of-Coolant Accident
LOCV	Loss of Condenser Vacuum (Anticipated Operational Occurrence)
LOPP	Loss of Preferred Power (Anticipated Operational Occurrence)
LRF	Large Release Frequency
LTC	Licence to Construct
LTPS	Licence to Prepare Site
LWM	Liquid Waste Management System (BWRX-300 System)
MCA	Main Condenser and Auxiliaries System (BWRX-300 System)
MCR	Main Control Room
MECP	Ministry of Environment, Conservation, and Parks (Ontario)
MLHGR	Maximum Linear Heat Generation Rate
MOT	Main Output Transformer
MPa	MegaPascals
MSIFN	Mississaugas of Scugog Island First Nation
MSL	Main Steam Line
MSR	Moisture Separator (and) Reheater
MTE	Main Turbine Equipment (BWRX-300 system)
mSv	milli-Sievert
NEW	Nuclear Energy Worker
NBCC	National Building Code of Canada
NBS	Nuclear Boiler System (BWRX-300 system)
NFCC	National Fire Code of Canada
NPFA	National Fire Protection Association
NLCA	*Nuclear Liability and Compensation Act*
NNIECR	*Nuclear Non-Proliferation Import and Export Control Regulations*
NRCan	Natural Resources Canada
NSCA	*Nuclear Safety and Control Act*
NUREG	Nuclear Regulatory publication (USNRC)
OGS	Offgas System (BWRX-300 System)

OHS	Occupational Health and Safety
OLC	Operating Limits and Conditions
OLMCPR	Operating Limit Minimum Critical Power Ratio
OPEX	Operating Experience
OPG	Ontario Power Generation Inc.
OSHA	*Occupational Safety and Health Act* (Ontario)
PCCS	Passive Containment Cooling System (BWRX-300 System)
PCS	Primary Containment System (BWRX-300 System)
PCW	Plant Cooling Water (BWRX-300 Auxiliary System)
PDP	Preliminary Decommissioning Plan
PEP	Project Execution Plan
PFP	Participant Funding Program
PLSA	Plant Services Area (BWRX-300)
PgMP	Program Management Plans
PIDP	Public Information and Disclosure Program
PIE	Postulated Initiating Events
PIRT	Phenomenon Identification and Ranking Table
PMP	Probable Maximum Precipitation
PPS	Plant Pneumatic System (BWRX-300 Auxiliary System)
PRCL	Power Reactor Construction Licence
PRSC	Pressure-Retaining System or Component
PRV	Pressure Relief Valve
PORV	Power-Operated Relief Valve
POSAR	Pre-Operational Safety Analysis Report
PSA	Probabilistic Safety Assessment
PSAR	Preliminary Safety Analysis Report
PSHA	Probabilistic Seismic Hazard Assessment
PWJIA	Pipe Whip Jet Impingement Assessment
PWQO	Provincial Water Quality Objectives (Government of Ontario)
RAMI	Reliability, Availability, Maintainability, and Inspectability
RB	Reactor Building
RCPB	Reactor Coolant Pressure Boundary
RCS	Reactor Coolant System

REGDOC	Regulatory Document (Canadian Nuclear Safety Commission)
RIA	Rights Impact Assessment (Indigenous Nation consultative document)
RIV	Reactor Isolation Valve
RP	Radiation Protection
RPC	Reactor Pressure Control (BWRX-300 System)
RPR	*Radiation Protection Regulations*
RPV	Reactor Pressure Vessel
RWB	Radioactive Waste Building
RWST	Refuelling Water Storage Tank (BWRX-300 Component)
SAFDL	Specified Acceptable Fuel Design Limits
SAT	Systematic Approach to Training
SCA	Safety and Control Area
SC	Steel-Plate Composite
SC	Safety Classification
SCCV	Steel-Plate Composite Containment Vessel
SCRAM	Safety Control Rod Axe Man
SCR	Secondary Control Room
SDC	Shutdown Cooling System (BWRX-300 Auxiliary System)
SDD	System Design Description
SDG	Standby Diesel Generator
SpA	Specific Area
SQ	Seismic Qualification
SOE	Safe Operating Envelope
SRF	Small Release Frequency
SRWMS	Solid Radioactive Waste Management Strategy
SSC	Structures, Systems, and Components
SSG	Specific Safety Guide (IAEA Publication)
TASS	Turbine Auxiliary Steam System (BWRX-300 System)
TB	Turbine Building
TBM	Tunnel Boring Machine
TBV	Turbine Bypass Valves
TCV	Turbine Control Valve
TGSS	Turbine Gland Seal Subsystem (BWRX-300 system)

TLOS	Turbine Lubricating Oil Subsystem (BWRX-300 system)
TRACG	Transient Reactor Analysis Code “GE Hitachi” (GE Hitachi version)
TSV	Turbine Stop Valve
UAT	Unit Auxiliary Transformer (BWRX-300 component)
UHS	Ultimate Heat Sink
UO_2	Uranium Dioxide
UPS	Uninterruptible Power Supply
US(A)	United States (of America)
USNRC	United States Nuclear Regulatory Commission
WTFN	Williams Treaties First Nations
VOC	Volatile Organic Compounds

Definitions Used in the CMD

The following presents common definitions of technical and regulatory terms that are used throughout this CMD.

Critical Power Ratio (CPR)	A value used to calculate the thermal limits of BWRs and is defined as the margin between the operating and dry-out conditions of the reactor coolant.
Fuel-out commissioning	Defined as "Phase A: Prior to Fuel Load" in section 11 of REGDOC-2.3.1, this constitutes the set of structures, systems, and component testing requirements prior to loading nuclear fuel into the reactor core.
Fuel-in commissioning	Defined in section 11 of REGDOC-2.3.1 to include Phases B, C, and D commissioning, this constitutes the set of SSC testing requirements following fuel loading in the core, roughly analogous to: • Phase B: Prior to Leaving Guaranteed Shutdown State • Phase C: Approaching Criticality and Low-Power Testing • Phase D: High-Power Testing
Maximum Linear Heat Generation Rate	A value used to define the maximum heat generation per unit fuel rod length (i.e., maximum heat generation rate), and is the maximum surface heat flux at a given point in the fuel rod.
Operating Limit Minimum Critical Power Ratio	A safety parameter that describes the margin of the fuel assembly that is closest to dry-out conditions. It is also the minimum value of the CPR that will prevent dry-out conditions during normal BWR operations, as well as for the most-limiting transients.
Power coefficient of reactivity	The sum of the moderator, fuel temperature, and void coefficients of reactivity, expressed as the change in reactivity per percentage change in reactor power.

Appendix A CNSC STAFF DETAILED ASSESSMENT OF THE SAFETY ANALYSIS AND PHYSICAL DESIGN SCAS

A.1 SAFETY ANALYSIS

CNSC staff's detailed technical review of the BWRX-300 reactor and plant *Preliminary Safety Analysis Report*, based on the expectations of REDOC-1.1.2, REGDOC-2.4.1, and REGDOC-2.4.2 is described in the subsections below.

Paragraph 5(f) of the *Class I Nuclear Facilities Regulations* requires that an application for a licence to construct contain a "preliminary safety analysis report demonstrating the adequacy of the design of the nuclear facility." Subsection 4.4, *Safety Analysis*, of REGDOC-1.1.2 – *Licence Application Guide: Guide to Construct a Reactor Facility* [R1-6] expands on this requirement.

The Preliminary Safety Analysis Report (PSAR) is expected to include a deterministic safety analysis (DSA), a probabilistic safety assessment (PSA), and a hazards analysis commensurate with the level of design. The application should demonstrate that all levels of defence-in-depth are addressed, and should confirm that the design is capable of meeting the applicable dose acceptance criteria and safety goals defined in REGDOC-2.5.2 – *Design of Reactor Facilities* [R1-8].

OPG submitted NK054-SR-01210-10000 – *Darlington New Nuclear Project – BWRX-300 Preliminary Safety Analysis Report* [R2.4-1] (PSAR) with its application for a licence to construct. CNSC staff's review of the PSAR and its supporting analyses against the expectations of REGDOC-2.5.2 is provided in the following subsections.

A.1.1 Hazard Analysis

Subsection 4.4.4, *Hazard Analysis*, of REGDOC-1.1.2 outlines expectations that an application for a licence to construct provide, to the extent practicable, a hazard analysis that has been conducted in accordance with the expectations of REGDOC-2.4.1, REGDOC-2.4.2, and REGDOC-1.1.1 – *Site Evaluation and Site Preparation for New Reactor Facilities* [R2.4-2]. The application should describe the analysis of all potential natural and anthropogenic internal and external hazards, including (but not limited to) earthquakes, floods, high winds, airplane crashes, internal floods, turbine missiles, and releases of hazardous substances.

Subsection 3.5, *Evaluation of Natural External Events*, and subsection 3.6, *Evaluation of External, Non-Malevolent, Human-Induced Events*, of REGDOC-1.1.1 provide expectations for the evaluation of external and internal hazards, requiring that an applicant perform a systematic approach to identification of all internal and external hazards throughout the lifecycle of the reactor facility.

Collectively, this suite of REGDOCs provide a basis for the identification, evaluation, and mitigation of potential hazards to workers, the environment, and to public health and safety, as low as reasonably achievable.

A.1.1.1 Hazard Screening, Assessment and Methodology

In its application and supporting documentation, OPG provided NK054-REP-01210-00144 – *BWRX-300 Darlington New Nuclear Project (DNNP) Hazards Analysis Methodology* [R2.4-3] and NK054-REP-01210-00158 – *BWRX-300 Darlington New Nuclear Project (DNNP) Hazard Analysis Results* [R2.4-4], which describe the methodology for hazard assessment used in the design of the BWRX-300 for CNSC staff review and acceptance. The methodology represents the basis for the hazard assessment, including defined criteria for hazard identification and screening.

The purpose of screening hazards in a separate analysis is to determine which hazards can be screened-out from the probabilistic safety assessment (PSA), and to identify which hazards require assessment in the PSA. As discussed in subsection A.1.2 – *Probabilistic Safety Analysis*, hazards from the reactor, support systems, and non-reactor sources (e.g., the spent fuel pool), are considered in the hazard screening analysis.

REGDOC-3.6 – *Glossary of CNSC Terminology* defines internal hazards as those hazards that can be initiated from within the plant boundary—for example, turbine missiles impacting mechanical equipment, drops of heavy loads, accidental release of chemicals, release of stored energy in fluid systems, etc. External hazards can be defined as a hazard initiated from outside the plant boundary, of natural or anthropogenic origin and whose effects on the facility are potentially hazardous—for example, flooding, fires, high winds, earthquakes, railcar derailments, and aircraft impacts.

The hazard screening analysis also considers combinations of hazards, such as two or more internal or external hazards, or external hazards combined with internal hazards, etc.

In its documentation, OPG states that hazards with a potential to cause an initiating event that could lead to core damage, and with a frequency of occurrence greater than 1.0E-07 per year, are included in the screening analysis.

The screening analysis involves assessing potential hazards following a three-step algorithm, as follows:

- Identification of all hazards: A list of all hazards is generated based on a review of available documentation, walkdowns of the site or facility, as well as industry operating experience. The list is circulated for review to a select group of risk assessment experts to ensure accuracy and completeness.

- Qualitative Screening: Using the identified list of hazards, a qualitative screening process is started to assess the impact of the hazards and the consequences of events. The purpose of this stage of the screening process is to screen out hazards, by conservatively demonstrating that the hazard does not impact the plant or is subsumed into a more frequent or more impactful event.
- Quantitative Screening: After qualitative criteria are examined and the hazard remains (i.e., is screened-in), a quantitative screening process is used. The purpose of this stage is to determine the probability of the event occurring and screen out events based on a defined likelihood or probability of occurrence.

CNSC staff note that this methodology is based on internationally accepted and developed guidelines, and a similar methodology for screening hazards for probabilistic safety assessments has been accepted by CNSC staff for OPG's existing nuclear reactors.

A.1.1.2 Hazard Analysis Results

A.1.1.2.1 Probabilistic Safety Analysis Screening

As described in subsection A.1.1.1 – *Hazard Screening, Assessment and Methodology* above, the result of the screening process results in hazards being "screened-in." A hazard that has been screened-out implies that the hazard does not pose any nuclear or conventional safety concerns or is subsumed by a more impactful hazard; whereas a screened-in hazard implies a further detailed PSA is required.

For the design of the BWRX-300 reactor, the PSA screening assessment resulted in a total of fifty-five (55) internal and external hazards identified for further consideration. Most hazards and hazard combinations were qualitatively screened-out due to the features of the BWRX-300 design, due to environmental characteristics specific to the Darlington site, or quantitatively screened-out.

OPG's hazard screening analysis identified that seismic hazards, high winds, internal fires, internal floods, and drops of heavy loads were hazards to be assessed in detail in PSAs. The high winds hazard PSA encompasses several coexistent hazards, including strong wind and extreme air pressure, strong wind and ice barriers, tornadoes and extreme hail, and wind-driven precipitation.

Forty (40) hazards were qualitatively screened out due either to the passive features of the BWRX-300 design, or due to environmental characteristics specific to the Darlington site. The remaining seven (7) hazards were screened quantitatively.

CNSC staff found the results of the screening analysis to be adequate and in line with CNSC expectations. OPG stated that the hazard analysis screening process, and the associated PSAs, will continue to evolve as the BWRX-300 design

progresses and procedures continue to be developed. Any consequential changes to the safety analyses will be provided to CNSC staff on a routine basis for review, and compiled into the facility's Safety Analysis Report should the project progress into the licence to operate stage.

A.1.1.2.2 Fire Hazard Assessment

OPG provided a preliminary Fire Hazard Assessment (FHA) in its application for a licence to construct, conducted in accordance with CSA N293 – *Fire Protection for Nuclear Power Plants* [R2.4-5]. CNSC staff review of the documentation noted that the scope of the FHA included a listing and description of the performance-based requirements of the applicable codes and standards. The FHA also provides documented fire protection acceptance criteria.

CNSC staff's review of the fire protection system documentation is found in subsection A.2.5.12 – *Fire Safety and Fire Protection Systems* .

A.1.1.2.3 Seismic Hazard Assessment

Subsection 7.15.1, *Civil Structure: Design*, of REGDOC-2.5.2 – *Design of Reactor Facilities* [R1-8] describes how that civil structures important to safety be designed to meet the serviceability, strength, and stability requirements of all possible load combinations under normal operations, AOOs, DBAs, and DEC conditions, including those initiated by external hazards.

As will be discussed in subsection A.1.2.2 – *PSA Submissions to Support a Licence to Construct* below, OPG screened-in and conducted a probabilistic seismic hazard assessment in its initial assessment, documented in NK054-REP-03500.8-00001 – *Darlington New Nuclear Project: Site-Specific Probabilistic Seismic Hazard Assessment* [R2.4-6].

CNSC staff sought the expertise of the Canadian Hazards Information Service (CHIS), within Natural Resources Canada, as the expert body that carries out seismic hazard reviews. CNSC staff, as well as CHIS review, determined that OPG's seismic hazard assessment is of good quality and was conducted using acceptable engineering judgment. Several areas where further information is needed were identified, and OPG will be required to provide more information prior to construction for CNSC staff to confirm the conclusions of the assessment.

CNSC staff requested OPG submit a revised seismic hazard assessment report, including the detailed information above, as well as additional details on the epistemic uncertainty and sensitivity of the seismic hazard to each of the source models in the assessment.

CNSC staff determined the level of information regarding seismic hazard assessment was sufficient for a licence to construct. OPG will be expected to provide a revised seismic hazard assessment report to the CNSC, where CNSC staff will review the updated report to finalise its conclusions on the seismic hazard at the DNNP site.

A.1.1.2.4 Wind Hazard Assessment

OPG submitted NK054-REP-02730-00003 – *Wind Gust Analysis Memorandum* [R2.4-7] and set of design-basis tornado values, documented in NK054-CORR-01210-1015770 – *Engineering Direction for Darlington New Nuclear Project Design Basis Tornado Values* [R2.4-8], in support of a high winds probabilistic hazard assessment. CNSC staff worked with subject matter experts from Environment and Climate Change Canada (ECCC) in its review of the high winds assessment.

CNSC and ECCC staff determined that, in general, OPG's wind hazard assessment is of good quality and did not identify any major areas of concern. Several areas requiring further information were identified, and OPG was requested to provide more information prior to CNSC staff to confirm the conclusions of the assessment.

CNSC staff determined the level of information regarding wind hazards was sufficient for a licence to construct. OPG will be expected to provide a revised high winds hazard assessment report, where CNSC staff will review the updated report to finalise its conclusions on wind hazards at the DNNP site.

A.1.1.2.5 Meteorological Hazards

In its Hazard Analysis, OPG analysed key meteorological characteristics relevant to the Darlington Nuclear site and the surrounding area, including the characterisation of meteorological extremes, in relation to the potential hazards to the BWRX-300 facility. The characteristics analysed included temperature, humidity, precipitation, high winds, tornadoes, snowfalls, lightning, as well as the impact of climate change on these characteristics. CNSC staff note that hazards due to external floods and climate change are discussed separately (see subsections A.1.1.2.6 – *Flooding Hazards* and A.1.1.2.7 – *Consideration of Climate Change Impacts*, respectively).

In addition to the general methodology for hazard screening as described in subsection A.1.1.1 – *Hazard Screening, Assessment and Methodology* above, OPG performed a systematic screening evaluation specific to meteorological hazards:

- Identify key external meteorological hazards applicable to the Darlington Nuclear site that could affect the BWRX-300 facility.
- Perform the qualitative screening of meteorological hazards based on defined screening criteria.
- Perform the quantitative screening of meteorological hazards not qualitatively screened-out, using screening criteria from American Society of Mechanical Engineers (ASME) standard RA-S-1.1 – *Standard for Level 1/Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications (2022 edition)* [R2.4-9].

A total of twenty-three (23) meteorological hazards were identified in this screening assessment. Among these identified hazards, eight were screened out qualitatively or quantitatively, four were integrated into more impactful hazards, four hazards related to wind conditions proceeded directly to be incorporated into a high winds probabilistic safety assessment, and seven were retained for inclusion in the "Fault List" to be addressed in the deterministic safety assessment.

CNSC staff reviewed the external meteorological hazards analysis and conclude that the screening analysis met the expectations identified in REGDOC-1.1.1 – *Site Evaluation and Site Preparation for New Reactor Facilities*, REGDOC-1.1.2 and, IAEA SSG-18 – *Meteorological and Hydrological Hazards in Site Evaluation for Nuclear Installations* [R2.4-10].

A.1.1.2.6 Flooding Hazards

OPG conducted a comprehensive flood hazard assessment for the DNNP in 2022, documented in NK054-REP-02730-00001 – *BWRX-300 Flood Hazard Assessment* [R2.4-11].

The flood hazard assessment evaluated multiple potential flooding events at the DNNP, including surface runoff from probable maximum precipitation (PMP) falling directly on the site, flooding from nearby streams and rivers, storm surges, tsunamis, and wave effects at Lake Ontario shorelines, among others. The flood hazard assessment considered the probable maximum flood, which is a combination of flooding due to surface runoff during a PMP event and a 1-in-100-year combined lake level and storm surge. The PMP itself represents a 12-hour precipitation equivalent to 420 milli-metres of total rainfall, with 51% of rainfall occurring in the 6th hour. The PMP is presumed to have a 1:1,000,000-year return period.

The assessment determined that the direct source of an external flood hazard at the DNNP is due to a PMP event, and is related to the ability of the site drainage system to convey stormwater runoff through the site and to the discharge point. This flooding would result in water levels reaching to an elevation of approximately 87.9 metres (Canadian Geodetic Vertical Datum, CGVD, 1928), considering the implementation of industry-standard stormwater management features. CNSC staff note that this maximum water elevation is slightly below the finished grade elevation of the DNNP site.

OPG also states in their assessment that flooding from Darlington Creek and Lake Ontario do not pose a significant flood hazard risk to the DNNP. The finished elevation of the DNNP site is approximately 12 metres above the foreshore of Lake Ontario, and over 11 metres above a 1:500-year maximum lake level of 76.5 metres CGVD, and therefore this elevation provides protection from coastal flood hazards. CNSC staff also note that the water level in Lake Ontario is also regulated between an average of 73.9 and 75.6 metres CGVD. The DNNP facility,

should construction proceed, will sit at a higher elevation than the existing reactor facility and are at a lower risk due to coastal flooding.

In addition, the Great Lakes region is historically geologically stable, with the largest measured seismic activity consisting of small earthquakes ranging from a magnitude of 3 or 4 on the Richter scale. Therefore, a flooding hazard due to a tsunami in Lake Ontario is an improbable event.

OPG also completed an assessment of the impact of climate change on the flood hazard at the DNNP site and concluded that no changes in the dominant flood hazards at the site are expected. OPG concluded that using a conservative approach in designing the facility to accommodate maximum rainfall amounts bounds predicted changes in rainfall amounts due to climate change.

CNSC staff reviewed OPG's flood hazard assessment submissions and concluded it met the expectations of REGDOC-1.1.1, as well as the guidance presented in IAEA SSG-18. CNSC staff determined that no safety concerns due to the predicted flood hazard are expected, if design requirements and mitigation measures outlined in the flood hazard assessment are implemented. CNSC staff also identified areas in the flood hazard assessment that require additional information to support its conclusions, and expect OPG to revise the flood hazard assessment as the design of the facility progresses.

A.1.1.2.7 Consideration of Climate Change Impacts

To ensure the DNNP is resilient against potential future changes in environmental conditions influenced by climate change (i.e., natural external hazards affected by climate change), OPG committed to providing an assessment prior to the commencement of construction, pursuant to DNNP Commitment D-C-7 – *Contingency Plan for Flooding and Other Extreme Weather Hazards* [R1-6].

To meet this commitment, OPG developed NK054-PLAN-07007-00001 – *Darlington New Nuclear Project Strategy for Addressing Climate Change Impacts* [R2.4-12], describing how the requirements of the D-C-7 commitment will be met. OPG has committed to incorporating climate change considerations, as discussed in the guidance provided by Environment and Climate Change Canada (ECCC) in its *Technical Guide for Strategic Assessment of Climate Change: Assessing Climate Change Resilience* [R2.4-13], to ensure resilience to predicted effects due to climate change in overall hydrogeological and meteorological hazards.

OPG has assessed climate change impacts at the DNNP site in two phases: Phase 1 consists of the climate change risk assessment, and Phase 2 describes the risk treatment measures for vulnerable structures, systems, and components identified in Phase 1.

OPG's Phase 1 report, NK054-REP-07007-00001 – *Darlington New Nuclear Project Phase 1 Climate Change Risk Assessment* [R2.4-14], identifies climate

change hazards that pose a potential nuclear, operational, or commercial risk to the BWRX-300 design or the constructed facility. The report also documents a bounding analysis on these hazards to predict how they will change over the life of the facility, projected future trends based on current climate models, and determined potentially vulnerable SSCs that will require risk treatment such as adaptive action or monitoring plans.

The risk assessment reviewed eighty-seven (87) SSCs and identified eleven (11) SSCs potentially vulnerable to climate change and therefore requiring evaluation for risk mitigation measures in the Phase 2 assessment. The remaining SSCs were determined not to be impacted by predicted climate change hazards, or whose design basis bounded projected climate change hazards. The report also identified no nuclear safety impacts for SSCs requiring detailed, Phase 2, assessment.

OPG's Phase 2 report, NK054-REP-07007-00002 – *Darlington New Nuclear Project Phase 2 Climate Change Risk Treatment* [R2.4-15], identified and summarised the risk treatment methods for these 11 potentially vulnerable SSCs, to mitigate potential impacts from 12 climate change hazards that pose risk to SSCs important to safety, such as extreme rainfall, flooding, tornadoes, downbursts or derechos, or extreme snow accumulation (among others), either by requiring additional design or analysis work or by establishing risk monitoring plans.

OPG conducted the site-specific climate change risk assessment by considering potential impacts of changes in climate over the lifecycle of the DNNP under two emissions scenarios (specifically, the "medium," and "high" representative concentration pathways (RCP)). The assessment was conducted using modelled local climate change information, itself derived from regional down-scaled multi-models, and ultimately constructed from 12 global climate models from the Coupled Model Intercomparison Project (Phase 5). The climate information was intended to determine predicted changes to hydrological (e.g., flooding due to extreme precipitation) and meteorological (e.g., extreme temperature) hazards up to the year 2100.

In its flood hazard assessment [R2.4-11], OPG indicates that the total precipitation, and the maximum 24-hour precipitation, are expected to increase by up to 25% by the year 2100. OPG also indicates that temperatures at the DNNP site are predicted to increase by up to 7.2 ^{o}C (in winter) by 2100. The projected increase in daily 1:100-year precipitation is also expected to increase by 10.7% by the year 2100 under this model. These climate projections are based on the high-emissions scenario.

Both the Phase 1 and Phase 2 assessment reports submitted concluded that there is a low impact on facility SSCs due to projected climate change. OPG also concluded the potential impact due to projected temperature and precipitation increases under climate change are bounded by the conservative PMP estimate

used in the flood hazard assessment, and therefore no additional flood hazards are expected due to potential increases in rainfall amounts.

In conclusion, CNSC staff reviewed the 2022 *BWRX-300 Flood Hazard Assessment*, OPG's strategy and assessment reports for consideration of climate change impacts, as well as other supporting documentation and concluded that OPG's assessment of climate change impacts is acceptable. OPG's assessment is in accordance with the expectations of REGDOC-1.1.1 and REGDOC-1.1.2 and is sufficient to ensure that the BWRX-300 facility is resilient to climate change as an external hazard. CNSC staff concur with OPG's determination that climate change presents a low predicted impact on SSCs, provided the risk treatment methodologies on the 11 potentially vulnerable SSCs proposed by OPG in its Phase 2 report are implemented.

CNSC staff note OPG's Phase 2 report is preliminary and requires review and acceptance by CNSC staff to confirm the conclusions made in the reports. OPG is expected to update this information in subsequent analyses and revisions to climate change predictions prior to construction.

A.1.1.2.8 Geological and Geotechnical Hazards

OPG has conducted detailed site geotechnical investigations for the on-shore BWRX-300 powerblock [R2.4-16], as well as the on-shore and off-shore portions of the condenser cooling water system [R2.4-17]. The results of these investigations confirm that the site remains geologically suitable for the deployment of new nuclear facilities at the DNNP site.

These investigations have concluded that no capable faults, avalanches, above-ground landslides, or under-water landslides exist on-site or in the vicinity of the site. Further, there has been no evidence of recent volcanic activities within 150 kilometres of the site. As part of the investigations, numerous deep boreholes were drilled and, in combination with existing geophysical data, confirm the absence of karstic features and other large voids at the DNNP site. There is also no historical evidence of subsidence at the site. Consequently, these hazards were screened out for further safety analysis. Subsection A.2.1.3 – *Geology and Geotechnical Data* provides further discussion on the geological characteristics of the DNNP site.

CNSC staff note the frost penetration depth at the site is approximately 1.3 metres below the ground surface, well above the foundation of the BWRX-300 reactor building and above where site services are to be installed. Structures within the BWRX-300 powerblock will be constructed with levelled and finished plant grade and are over 100 metres away from the shoreline. Shoreline protection measures will be required and will prevent the erosion of the shoreline bluffs, and consequently the steep shoreline bluffs do not present a hazard to DNNP SSCs. Slopes to be excavated or cut for the DNNP are expected to be designed to meet current applicable engineering guidelines for stability.

Methane gas was found near the bedrock and in the overburden interface in several boreholes. Methane monitoring will be required for excavation activities near the bedrock layer, with precautionary measures implemented as required by the Ontario *Occupational Health and Safety Act*. Methane gas present during Reactor Building excavation at bedrock is expected to dissipate quicker than observed during the investigations, due to the significantly larger available air space.

As earthquake hazards have the potential to cause damage to multiple plant SSCs due to excessive ground motion, OPG excluded seismic hazards from screening and conducted a detailed seismic probabilistic safety assessment. Subsection A.1.1.2.3 – *Seismic Hazard Assessment* provides more discussion of the seismic probabilistic safety assessment conducted to support the DNNP.

The DNNP site was previously assessed from a seismic perspective in 2009 in support of the site evaluation, which was subsequently updated in 2011, 2019, and 2021 using updated earthquake catalogues, maximum magnitude values, occurrence rates, and updated ground motion and attenuation models.

In 2022, OPG performed a site-specific probabilistic seismic hazard assessment (PSHA) in accordance with expectations of REGDOC-2.5.2 – *Design of Reactor Facilities* and the CSA N289 series of standards, including considerations of BWRX-300 specific design requirements. This study developed site-specific ground motions, considering local conditions, identified with extensive geotechnical investigations. The site-specific hazard was developed at three horizons: the bottom elevation of the Reactor Building foundation, the soil-bedrock interface elevation, and the finished site grade elevation. Requirements from both the design-basis earthquake (DBE) and beyond design-basis earthquake (BDBE) response spectra at these three elevations were included and further developed for safety analysis and design of the BWRX-300 reactor.

OPG indicated it intends to replace the soils above the 80.0 metre Canadian Geodetic Datum (CGD) elevation, in the power block, with engineered backfill material. CNSC staff also identified that the site-specific seismic hazards for the finished grade elevation are determined based on limited testing data, or on estimated properties of the anticipated backfill material.

OPG document DA1-SNC-Y99-RNN-TSPC-GT-0001 – *Excavation and Backfill Specifications for Power Block Area* [R2.4-18] documents the specifications of the engineered backfill material for the BWRX-300 power block. This document includes verification and test activities to verify the assumptions made in the site specific PSHA, including an assessment of its liquefaction potential under the DBE and BDBE scenarios. OPG has committed, following the completion of the engineered backfill, to provide CNSC the results of verification and test activities that demonstrate the backfill has achieved desired properties prior to the construction of any permanent SSCs on the backfill.

The seismically induced liquefaction hazard for foundation soils of the BWRX-300 structures and Emergency Mitigating Equipment access routes is assessed under DBE and BDBE scenarios, using site-specific subsurface soil conditions from the geotechnical investigations and current seismic hazard values from the PSHA. With the planned replacement of soils above the 80.0-metre elevation, this assessment concluded that:

- Liquefaction for foundation soils is not expected for structures within the BWRX-300 powerblock under the DBE scenario; however, soils near the Independent Spent Fuel Storage Installation structure down to about 5 m depth and at the 77-metre elevation are expected to experience liquefaction.
- The estimated seismically induced settlement for powerblock structures under the DBE scenario is less than 5 mm, with an expected maximum of 8 mm. The seismically induced lateral displacement is expected to be up to 28 mm under the DBE scenario.
- Under the BDBE scenario, liquefaction for foundation soils for the Reactor, Turbine, and Radwaste Buildings is not expected; however, soil liquefaction is expected for the Control Building at the 69-metre elevation, and at the 70-metre elevation for the Reactor Auxiliary Bay. Significant liquefaction is expected for soils in the vicinity of the ISFSI structure under the BDBE.
- The estimated seismically induced settlement for power block structures under the BDBE scenario is expected to range between 17 and 27 mm. The seismically induced lateral displacement for these structures is expected to range between 50 and 90 mm, whereas the ISFSI structure would experience much higher settlement and lateral displacement.

Through a review of the liquefaction hazard study [R2.4-19], CNSC staff noted that the study assumes there is negligible soil disturbance from construction activities. Available borehole data surrounding each proposed structure represents the post-construction conditions except for over-excavation and backfill areas. Should sufficient disturbance in soils surrounding the Reactor Building occur, current borehole data may not be representative of the post-construction conditions and the liquefaction assessments of powerblock structures may require re-assessment. OPG is expected to provide the results of ground movement and groundwater monitoring studies to demonstrate there has been no, or negligible, disturbance to the soils surrounding the reactor building excavation.

CNSC staff have requested OPG confirm ground support for deep excavation of the Reactor Building be designed and constructed to minimise the disturbance to surrounding soil during excavation. OPG indicated that a shoring wall will be installed prior to deep excavation, which will be established through the soil and emplaced into the bedrock. This will allow for excavation of a vertical shaft slightly larger than the proposed Reactor Building superstructure, intended to minimise any disturbances to surround soils.

While vertical shaft excavation is expected to result in negligible disturbances to soils surrounding the Reactor Building, should there be significant disturbances identified through OPG's ground movement and groundwater monitoring program, soil liquefaction supporting assessments will need to be reviewed to ensure post-construction conditions do not alter the conclusions. As soil liquefaction could result in damage to plant SSCs, it is expected to be considered in the design of BWRX-300 SSCs.

A.1.2 Probabilistic Safety Analysis

Subsection 4.4.5, *Probabilistic Safety Assessment*, of REGDOC-1.1.2 outlines expectations that an application for a licence to construct, to the extent practicable, include a probabilistic safety assessment (PSA) conducted in accordance with REGDOC-2.4.2 – *Probabilistic Safety Assessment (PSA) for Reactor Facilities* [R2.4-20].

The PSA, together with the other elements of a safety analysis (i.e., a Deterministic Safety Analysis, Hazard Analysis), is intended to provide a systematic analysis to give confidence that a reactor facility design will align with fundamental safety objectives established in the CNSC regulatory framework. The objectives of a PSA for the plant design phase include:

- Demonstration that a balanced design has been achieved, and that no particular feature or hazard group provides a disproportionately large or uncertain contribution to plant risk.
- Demonstration that quantitative safety goals defined in REGDOC-2.5.2 – *Design of Reactor Facilities* (e.g., core damage frequency (CDF), large release frequency (LRF), and small release frequency (SRF)) are met.
- Provide site-specific assessments for probabilities of occurrence, and consequences of, external hazards that can be used for plant design and design improvement.
- To identify plant vulnerabilities, risk-important Structures, Systems, and Components (SSC), and operational procedures to support plant design.
- Provide confidence that small change of conditions that have potential to lead to a catastrophic increase in the severity of consequences (so-called "cliff-edge effects") are prevented.
- Provide support for other safety analysis elements throughout the plant design.
- Provide support for the development of other plant operational procedures, including emergency operating procedures, and a severe accident management program.

An application for a licence to construct must demonstrate that all levels of defence in depth have been addressed, and should confirm that the design of the facility is capable of meeting dose acceptance criteria and safety goals established

in REGDOC-2.5.2. The application should also describe how the results of the PSA have been used to identify reactor vulnerabilities.

As described in REGDOC-3.6 – *Glossary of CNSC Terminology*, a PSA can be divided into three levels, roughly corresponding to a progression of the detail of the comprehensiveness of the safety assessment, as follows:

- A Level 1 PSA identifies and quantifies a sequence of events that may lead to a loss of core structural integrity and consequential massive fuel failures.
- A Level 2 PSA continues from a Level 1 PSA, and analyses containment behaviour, evaluates the radionuclides released from the failed fuel, and quantifies the releases to the environment.
- A Level 3 PSA continues from a Level 2 PSA, and analyses the distribution of radionuclides in the environment and the consequential effects on public health.

A.1.2.1 Description of Computer Codes and Methodologies Used in the Probabilistic Safety Assessment

Subsection 3.9, *Methodology and Computer Codes*, of REGDOC-2.4.2 outlines expectations that the licensee seek CNSC acceptance of PSA methodologies and computer codes used for the PSA.

OPG provided NK054-REP-01210-00144 – *BWRX-300 DNNP Probabilistic Safety Assessment Methodology* [R2.4-21] for CNSC review and acceptance. CNSC staff reviewed OPG's submission against regulatory expectations for PSAs and best international practices, and accepted OPG's proposed methodology [R2.4-22].

OPG also submitted *DNNP – Request for CNSC Acceptance for OPG Use of Computer Codes in BWRX-300 Probabilistic Safety Assessments* [R2.4-23] in accordance with the expectations of subsection 3.9 of REGDOC-2.4.2. This submission included a request to use the latest versions of codes controlled by the Electric Power Research Institute (EPRI), including:

- Computer Aided Fault Tree Analysis System (CAFTA) (version 11)
- PRAQuant (version 11)
- System Importance (SYSIMP) (version 11)
- Fault Tree Reliability Evaluation Expert (FTREX) (version 1.8)
- Uncertainty Evaluation Tool (UNCERT) (version 11)
- FRANX (version 11)
- Advanced Cutset Upper Bound Estimator (ACUBE) (version 11)
- Human Reliability Analysis (HRA) Calculator (version 5).

This suite of codes has functionality for event tree modelling, fault tree modelling, basic events editing, solving of faut trees, human reliability calculations, as well as importance and uncertainty analysis capabilities. The codes do not include any modelling of plant systems and parameters that are specific to the reactor technology and are designed to be technology neutral.

In addition, these codes are widely used in the development of PSAs for nuclear power plants, as well as for regulatory review of those PSA models. Previous versions of these EPRI codes have also been accepted by CNSC staff for use in Canadian nuclear power plants. CNSC staff accepted the use of these versions of the EPRI codes for use in the PSA for the DNNP.

A.1.2.2 PSA Submissions to Support a Licence to Construct

Subsection 4.4.5 of OPG's application provides a description of the scope of the PSA performed in support of the licence to construct. It also provides several supporting documentation as references, including NK054-REP-01210-00144 – *BWRX-300 DNNP Probabilistic Safety Assessment Methodology* [R2.4-21] and NK054-REP-01210-00163 – *BWRX-300 Probabilistic Safety Assessment Summary Report* [R2.4-24].

Subsection 15.6 of the PSAR provides an overview of the development of the PSA for the DNNP, including preliminary results from the Level 1 and Level 2 PSA, as well as insights and applications resulting from the PSA. In addition, the following specific PSA reports provide input into the PSA Summary Report:

- OPG document NK054-REP-01210-00158 – *BWRX-300 DNNP Hazard Analysis Results* [R2.4-25]
- BWRX-300 Level 2 PSA
- NK054-REP-03500.8-00001 – *DNNP Site-Specific Probabilistic Seismic Hazard Assessment* [R2.4-6]
- BWRX-300 Internal Fire Probabilistic Safety Assessment
- BWRX-300 Internal Flood Scoping Evaluation
- BWRX-300 High Wind Scoping Assessment

A.1.2.3 CNSC Staff Review Criteria

CNSC staff's review criteria for PSA, as applied to the BWRX-300 reactor, are developed from a combination of regulatory expectations specified in REGDOC-1.1.2, REGDOC-2.4.2, REGDOC-2.5.2, as well as international best practices such as IAEA SRS-25 – *Review of Probabilistic Safety Assessments by Regulatory Bodies*.

- Section 3, *Requirements for a Probabilistic Safety Assessment*, of REGDOC-2.4.2 provides expectations for the scope of a Probabilistic Safety Assessment, including:

  - A Level 1 and Level 2 PSA for a reactor facility includes the reactor core and other sources of radioactive materials, such as the spent fuel pool.
  - If applicable, impacts on the reactor facility from deployment of multiple units are considered.
  - A PSA includes analysis of conditions at both the full-power and shutdown states.
  - A PSA includes all potential site-specific initiating events and potential hazards (such as internal events, internal hazards, and external hazards).
  - A PSA shall include a sensitivity analysis, uncertainty analysis, and importance analysis.
- Technical adequacy of a Probabilistic Safety Assessment
  - The PSA models reflect as-built and as-operated conditions (inclusive of multi-unit impacts), as closely as reasonably achievable within the limitations of PSA technologies, and consistent with risk impacts. For a PSA in the design of a plant, CNSC staff expect that the Level 1 PSA will meet Capability Category I (CC-I) expectations described in ASME/ANS RA-SB-2013 – *Standard for Level I / Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications* [R2.4-26].
  - CNSC staff expect that the Level 2 PSA will meet the Capability Category expectations described in ASME/ANS RA-S-1.2-2019 – *Severe Accident Progression and Radiological Release (Level 2) PRA Standard for Light Water Reactors* [R2.4-27].
  - PSA models use realistic assumptions and realistic data sources.
  - A PSA shall be consistent with facility testing, maintenance, and configuration management programs, and consistent with the intended uses of the PSA.
  - A PSA shall seek CNSC staff acceptance of the methodology and computer codes to be used.

A PSA is also expected to be developed consistent with other domestic and international codes, standards, and best practices, including:

- IAEA Safety Standard SSG-3 – *Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants* [R2.4-28].
- IAEA SSG-4 – *Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants* [R2.4-29].
- IAEA INSAG-10 – *Defence in Depth in Nuclear Safety* [R2.4-30]
- CSA N286 – *Management System Requirements for Nuclear Power Plants* [R2.1-1].

- CSA N290.17 – *Probabilistic Safety Assessment for Nuclear Power Plants* [R2.4-31].

CNSC staff also reviewed OPG's application for whether PSA results and insights were used to support other plant programs such as SSC classification (see subsection A.2.2.6.1 – *Safety Classification*), reliability design for SSCs important to safety (see subsection A.2.2.7 – *Design for Reliability*), other reliability considerations during the design stage, and development of plant operating programs. CNSC staff's review and assessment of these topics are documented in the relevant subsections of the CMD.

In addition, REGDOC-2.5.2 provides quantitative expectations for the use and application of the PSA for the design of the plant, including specification of safety goals:

- Core Damage Frequency (CDF): The sum of frequencies of all event sequences that can lead to significant core degradation shall be less than 1E-05 per reactor-year.
- Small Release Frequency (SRF): The sum of frequencies of all event sequences that can lead to a release to the environment of more than 1 peta-Becquerel (10^{15} Bq) of iodine-131 shall be less than 1E-05 per reactor-year.
- Large Release Frequency (LRF): The sum of frequencies of all event sequences that can lead to a release to the environment of more than 100 tera-Becquerels (10^{14} Bq) of caesium-137 shall be less than 1E-06 per reactor-year.

Finally, CNSC staff consulted, as guidance, the practices used by the USNRC to review containment performance for advanced water reactors, documented in Chapter 19 of NUREG-0800 – *Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition* [R2.4-32], as well as USNRC RG 1.200 – *Acceptability of Probabilistic Risk Assessment Results for Risk-Informed Activities* [R2.4-33] in the review of the provided PSA documentation.

A.1.2.4 Preliminary DNNP Probabilistic Safety Analysis Results

CNSC staff reviewed Chapter 15 of the PSAR, OPG document NK054-REP-01210-00163 – *BWRX-300 Probabilistic Safety Assessment Summary Report* [R2.4-24], and supporting documentation.

CNSC staff provided comments on the completeness of the PSA submissions provided by OPG, including that the PSA submission does not include uncertainty, sensitivity, and importance analyses. OPG indicated that the PSAs are iterative in nature and will evolve as the design progresses, and that the final design PSAs will include the uncertainty, sensitivity, and importance analyses.

CNSC staff have accepted OPG's response and will review additional submissions as they are available. CNSC staff also note that OPG is using modified importance measures for the identification of risk-significant Safety Class 2 and 3 SSCs. This is an approach that differs from current practice and is currently under review by CNSC staff as outlined in subsection A.2.2.6.1 – *Safety Classification*. OPG will be expected to provide updated PSA submissions as the design progresses, including uncertainty, sensitivity, and importance analyses.

CNSC staff completed a review of the provided PSA submissions, focusing on the PSA summary report, the Level 1 and Level 2 Internal Events PSA, Internal Fires, Internal Floods, as well as High Wind and Seismic PSAs. The review resulted in several comments and clarifications regarding the technical adequacy of the PSA to support the design of the plant, including the reliability of passive systems and their modelling strategy.

CNSC staff noted that the design of the BWRX-300 relies on passive safety systems and functions to achieve specific safety functions, including overpressure protection for the reactor coolant system and containment, decay heat removal, and containment cooling. CNSC staff expects that the design of a safety system demonstrate it is able to meet defined reliability targets. In addition, the reliability of passive safety systems shall be modelled in the PSA. CNSC staffs' review of the documentation provided by OPG noted that additional information is required to demonstrate reliability targets will be met.

OPG indicated that a reliability analysis for the Isolation Condenser System, as a representative passive safety system, was conducted following the methodology outlined in IAEA TECDOC-1752 – *Progress in Methodologies for the Assessment of Passive Safety System Reliability in Advanced Reactors*. In addition, OPG has also prepared a report to discuss the reliability of passive safety system functions. CNSC staff are reviewing the provided reliability analysis and reliability modelling.

CNSC staff also identified several other comments related to PSA development, identification of parameters, and modelling of plant systems in the PSA. OPG has committed to provide additional information as the BWRX-300 design continues to progress through the completion of design milestones. CNSC staff will continue to review the detailed information when it is provided and as the design progresses, to ensure that the PSA is conducted in accordance with accepted methodologies and meets regulatory requirements.

Table A-1 below provides an overview of the preliminary PSA results for the BWRX-300 reactor, summarising the information presented in subsection 15.7 of the PSAR [R2.4-1]. The table presents a summary of the results of the PSA for credible PIEs leading to core damage, represented by the "Core Damage Frequency," as well as for large releases of caesium-137, represented by the "Large Release Frequency" column, respectively.

Table A-1: Preliminary Probabilistic Safety Analysis Results for the BWRX-300 Reactor

PSA Element	Core Damage Frequency (CDF) (# per year)	Large Release Frequency (LRF) (# per year)
Internal Events (at-power)	1.10E-08	1.80E-09
Internal Events (low power and shutdown, LPSD)	7.0E-10	7.00E-10
Seismic Events	5.10E-08	4.80E-08
Internal Fire Events	1.30E-08	1.30E-08
Internal Flood	1.50E-09	5.50E-10
High Wind Events	Straight Wind: 4.30E-09 Tornado: 1.30E-10	Straight Wind: 4.30E-09 Tornado: 1.30E-10
Fuel and Heavy Load Movements (At-Power)	Fuel Damage Frequency (FDF): 2.30E-09	5.70E-09
Fuel and Heavy Load Movements (Low Power and Shutdown)	1.60E-09 (CDF) 1.80E-09 (FDF)	(Included in Fuel and Heavy Load Movements (at-power) above)
Spent Fuel Pool Events	1.30E-08	1.30E-08
Total Contribution	9.82E-08 (CDF) 4.10E-09 (FDF)	8.72E-08

From a review of the preliminary results CNSC staff conclude that:

- OPG has a process in place to perform and update PSA results, and that the current preliminary results indicate that the safety goals established in REGDOC-2.5.2 for CDF and LRF will be met. CNSC staff will continue to review and assess PSA results as the design progresses to verify that the PSA meets regulatory expectations.

- The Small Release Frequency (SRF) is not included in the summary of PSA results. OPG indicated that the severe accident analysis showed that accident sequences for the BWRX-300 reactor that meet SRF criteria also meet the criteria for a LRF, and the sequences are considered under the LRF criteria. OPG has not yet provided detailed information (e.g., a source term analysis), to support this argument. As REGDOC-2.5.2 explicitly identifies SRF safety goals, CNSC staff expect that the SRF should be calculated. OPG has committed to providing this information

and CNSC staff will review OPG's detailed source term analysis as the information becomes available.

- The overall seismic risk is the dominant contributor to overall plant risk, as it contributes the majority of the CDF and LRF risks.

CNSC staff note that these results are preliminary and are used to continue to progress the design of the BWRX-300. OPG has indicated that subsequent PSAs could result in variances in the calculated CDF or LRF risks, and that any potential variances will be further reflected in updated safety assessments as the design progresses.

CNSC staff determined that the information OPG has provided for PSA is sufficient for a licence to construct. Safety analysis is an iterative process, and OPG has committed to provide further detailed PSA information as it becomes available. CNSC staff will continue to review this information to verify that the PSAs are conducted in accordance with the regulatory expectations in REGDOC-2.4.2 – *Probabilistic Safety Assessments (PSA) for Reactor Facilities*.

A.1.3 Deterministic Safety Analysis

Subsection 4.4.3, *Deterministic Safety Analysis*, of REGDOC-1.1.2 outlines expectations that the deterministic safety analysis be conducted in compliance with REGDOC-2.4.1 – *Deterministic Safety Analysis* [R2.4-34]. To ensure that the design is capable of meeting dose acceptance criteria from REGDOC-2.5.2, the applicant shall demonstrate that, during a design-basis accident (DBA), there is a high degree of confidence that qualified systems[2] can mitigate the consequences of the DBA.

The objective of a DSA is to confirm that the design of a reactor facility meets design and safety requirements, to derive operational limits and conditions consistent with the design and safety requirements for the reactor and assist in demonstrating that safety goals are met.

The safety strategy framework for the BWRX-300 integrates defence lines (see subsection A.2.2.5 – *Defence in Depth*) that protect the integrity of physical barriers against any potential radioactive releases. OPG submitted its deterministic safety analyses to demonstrate the effectiveness of SSCs that are required to perform their assigned functions, within their respective defence lines, credited to mitigate Postulated Initiating Events (PIE). The PIEs analysed and reviewed by CNSC staff were identified and selected using a systematic fault evaluation process, further described in this subsection.

Paragraph 5(f) of the *Class I Nuclear Facilities Regulations* requires that the PSAR demonstrates the adequacy of the design of the nuclear facility. OPG states

[2] A "qualified system" has the same definition as appears in subsection 4.4 of REGDOC-2.4.1, as in it is a system that is credited to mitigate consequences of an accident (AOO or DBA) event.

that the PSAR had been prepared in accordance with guidance from the International Atomic Energy Agency (IAEA), as documented in specific safety guide SSG-61 – *Format and Content of the Safety Analysis Report for Nuclear Power Plants* [R2.4-35]. CNSC staff have reviewed the format and structure of the PSAR and concur that it is aligned with the format and structure outlined in the IAEA guidance document.

A.1.3.1 General Overview of the Deterministic Safety Analysis

Chapter 15 of NK054-SR-01210-10000 – *BWRX-300 Preliminary Safety Analysis Report* [R2.4-1] documents the results of completed preliminary safety analyses. The PSAR provides structured information intended to demonstrate compliance with REGDOC-2.4.1, REGDOC-2.5.2, and CSA standard N286.7 – *Quality Assurance of Analytical, Scientific, and Design Computer Programs* [R2.4-36].

This chapter provides a general consideration of the BWRX-300 safety analysis identification, categorisation, and grouping of postulated initiating events (PIE). Safety objectives and human factors considerations in deterministic and probabilistic safety analyses are also provided.

CNSC staff conducted a review of the deterministic safety analysis requirements for the overall safety analysis of the reactor, as described throughout this Chapter. The DSA is divided into two parts:

- Part One presents derived acceptance criteria (see subsection A.1.3.2 – *Safety Objectives and Acceptance Criteria*), and describes an evaluation and analysis of the fault sequences to confirm the adequacy of fission product barriers against those derived acceptance criteria (see subsection A.1.3.3 – *Identification, Categorisation, and Grouping of Postulated Initiating Events and Accident Scenarios*).

- Part Two describes an analysis of the event dose consequences resulting from a fission product release, or other source of release of radioactive materials (see subsections A.1.3.5 – *Analysis of Normal Operation Conditions* through A.1.3.8 – *Analysis of Design Extension Conditions*).

OPG conducted the DSA considering the operational states of the reactor and the event classifications provided in REGDOC-2.5.2 as follows: normal operations, Anticipated Operational Occurrences (AOO), Design-Basis Accidents (DBA), and Design Extension Conditions (DEC) with and without core damage. In addition, PIEs associated with both internal and external hazards in the spent fuel pool, with fuel handling events, and analysis of any consequential releases of radioactive material are included.

Safety margins are important indicators of plant and equipment health. Evaluations of safety margins are conducted on the assumptions specified in the analysis and design rules applied to SSC configurations. The safety analysis for the BWRX-300 has used three types of deterministic methodologies: the “baseline

DSA" (BL-DSA), the "conservative DSA" (CN-DSA), and the "extended DSA" (EX-DSA). Each of these methodologies are applied to postulated events to demonstrate that these events meet applicable acceptance criteria, as well as the effectiveness of Defence Line (DL) mitigation measures.

The BL-DSA and EX-DSA methodologies use best-estimate techniques, consistent with expectations presented in subsection 4.4.2 of REGDOC-2.4.1, while the CN-DSA methodology considers three distinct groups of safety margins: large, medium, and small; each of which determine the specific methodology applied. For the CN-DSA analyses, a graded approach for the combination of uncertainties is used, in which OPG performs a qualitative assessment of the safety margin on a case-by-case basis and includes a review of the magnitude of the results compared to acceptance criteria.

The computer code Transient Reactor Analysis Code "GE Hitachi" (TRACG) has a multi-dimensional, two-fluid, model for the assessment of both reactor thermal-hydraulics and a three-dimensional reactor kinetics model, applied to the BWRX-300. TRACG is used to perform safety analyses of reactor transients and of overall reactor stability for both forced-circulation and natural-circulation BWR designs. It is intended to include models for important reactor phenomena predicted to occur in PIEs, to evaluate potentially coupled thermal-hydraulic and neutronic instabilities in the reactor core. CNSC staff provide an overview of the purpose of the TRACG code, as well as an overview of its qualification under the Canadian framework, in subsection A.1.3.4.1 – *Transient Reactor Analysis Code "GE Hitachi" (TRACG)*.

Previous iterations of the TRACG code, similar to the approach used for BWRX-300, use a systematic approach developed for the USNRC called "Code Scaling, Applicability, and Uncertainty (CSAU)" to confirm the applicability of a computer code for use in a DSA. This approach has requirements consistent with applicable Canadian regulatory expectations identified in REGDOC-2.4.1, REGDOC-2.5.2, and in CSA N286.7. It involves the systematic evaluation of phenomena important to plant design and identified accident scenarios.

OPG has implemented a qualitative process to identify and rank the importance of phenomena and produced a Phenomenon Identification and Ranking Table (PIRT). The PIRT is used alongside TRACG documentation to demonstrate the applicability and qualification of the TRACG model to predict phenomena important to the reactor design. The PIRT is also used, where required, as the basis to perform a quantitative uncertainty analysis of transient reactor scenarios.

Approach for Non-LOCA Events

For non-LOCA transient events, OPG considered fault sequences where the BWRX-300 reactor coolant pressure boundary (RCPB) remains intact. The TRACG code used in this assessment is described in OPG document NK054-REP-01210-00164 – *TRACG Application for BWRX-300* [R2.4-37].

CNSC staff reviewed this document and additional documentation supporting the use of the TRACG code for non-LOCA postulated events and have determined that the approach is acceptable and is consistent with Canadian regulatory expectations.

Approach for LOCA Events

For LOCA transient events inside of containment, OPG stated it will apply the "Generation of Thermal-Hydraulic Information for Containment" (GOTHIC) computer code in addition to the TRACG code. The GOTHIC code is a general-purpose thermal-hydraulics code for the design, licensing, safety, and operating analysis of containment structures for nuclear power plants. CNSC staff provide an overview of the purpose of the GOTHIC code, including its qualification under Canadian framework, in subsection A.1.3.4.2 – *Generation of Thermal-Hydraulic Information for Containment (GOTHIC)* .

OPG document NK054-REP-03555-00001 – *BWRX-300 Containment Evaluation Method* [R2.4-38] describes the methodology and assumptions used in the evaluation of LOCA transients for the BWRX-300 reactor. This proposed methodology is new to the BWRX-300 design, as previously the TRACG code was solely used for assessment of containment behaviour during LOCA assessments for BWRs. CNSC staff have determined that the framework proposed in [R2.4-38] is acceptable and consistent with Canadian regulatory expectations.

The methods and assumptions used for performing the DSA, to confirm the performance of the barriers to prevent fission product release during LOCA events, were confirmed to be acceptable and have been conditionally accepted by CNSC staff, as a result of a joint USNRC-CNSC review of Licensing Topical Report titled *Joint Report on GE Hitachi's Containment Evaluation Method* [R2.4-39]. CNSC staff's acceptance of this report documented some considerations for further analysis in subsequent licensing stages as the design matures. OPG will be required to provide additional analyses to address these considerations as the design continues to mature.

CNSC staff note that the TRACG code calculates the mass and energy release from modelled breaks of various sizes and locations inside the containment structure. These calculations are treated with a methodology involving a one-way coupling with conservatively calculated mass and energy release rates and supplied as input boundary conditions to the GOTHIC code calculation, until the point in the modelled behaviour when both the containment and Reactor Pressure Vessel (RPV) pressures maintain equilibrium. This proposed methodology does not require the continuation of the GOTHIC calculation beyond this equilibrium point, because the containment pressure in the long-term is bounded by the calculated RPV pressure.

CNSC staff have independently executed the code for the modelled scenarios based on the parameters identified in the safety analysis completed to-date, to

verify the assumptions, inputs from the TRACG code, as well as the modelling methodology itself, to verify that the results are consistent with OPG's predictions documented in Chapter 15 of the PSAR.

CNSC staff note that the safety analyses are not yet reflective of the completed BWRX-300 design, and that they will continue to evolve as the design progresses. Safety analysis is an iterative process, and OPG has committed to provide further detailed safety analysis information as it becomes available. CNSC staff will continue to review this information to verify that the safety analyses are conducted in accordance with the regulatory expectations in REGDOC-2.4.1 – *Deterministic Safety Analysis*.

The following subsections provide an overview of key aspects of the DSA, as well as CNSC staff's conclusions resulting from a review of the provided documentation.

A.1.3.2 Safety Objectives and Acceptance Criteria

Subsection 4.4.3 of REGDOC-1.1.2 outlines expectations that an application for a licence to construct provide the dose acceptance criteria used in the analysis of the design. Acceptance criteria for DSAs are derived from the dose acceptance criteria outlined in subsection 4.3.2 of REGDOC-2.4.1 and subsection 4.2.1, *Dose Acceptance Criteria*, of REGDOC-2.5.2:

- 0.50 milli-Sieverts (mSv) for any Anticipated Operational Occurrence (AOO), and
- 20.0 mSv for any DBA.

REGDOC-2.5.2 further explains that, for each plant state analysed in the design:

"*Acceptance criteria shall be assigned to each plant state considered in the design, taking into account the principle that frequent PIEs will have only minor or no radiological consequences, and that any events that may result in severe consequences will be of extremely low probability*."

Subsection 4.3.2, *Acceptance Criteria: Anticipated Operational Occurrences and Design-Basis Accidents*, of REGDOC-2.4.1 expects that acceptance criteria be established as thresholds for the safe operation of the facility in normal operations, AOOs, DBAs, and where practicable, DECs. Specifically, the analyses for AOOs and DBAs is expected to demonstrate that radiological doses to members of the public do not exceed established limits, and the derived acceptance criteria established in accordance with subsection 4.3.4 of REGDOC-2.4.1 are also met. The analyses should demonstrate that the committed whole-body dose for members of the critical groups most at-risk, at or beyond the site boundary, is calculated for a period of 30 days following the analysed event.

OPG states that the DSA calculates the committed whole-body dose for averaged members of each critical group most at-risk for a 30-day period, after each analysed event. This calculated dose to the critical groups is less than, or equal to, the dose acceptance criteria outlined in subsection 2.4.1 of REGDOC-2.5.2.

Subsection 15.7, *Results of the Deterministic Safety Analyses and Probabilistic Safety Assessment*, of the PSAR presents several dose calculation tables for several AOOs, DBAs, and DECs, themselves analysed as limiting events in subsection 15.5 of the PSAR.

Qualitative acceptance criteria are defined for each AOO and DBA to confirm the effectiveness of BWRX-300 system to maintain the integrity of physical barriers against the release of radioactive materials. Qualitative and quantitative acceptance criteria are used to support experimental data, prescribed by regulatory requirements or codes and standards, and to confirm the regulatory acceptance criteria, respectively.

Table A-2 below identifies the acceptance criteria for the deterministic safety analysis of AOOs in accordance with subsection 4.3.4 of REGDOC-2.4.1. The acceptance criteria is based upon the fission product barrier, or equivalent fundamental safety function (FSF) (see subsection A.2.2.4 – *Safety Objectives, Goals, and Functions* for a description of the fundamental safety functions).

Table A-2: Deterministic Safety Analysis Derived Acceptance Criteria for Anticipated Operational Occurrences

Fission Product Barrier or Fundamental Safety Function	Qualitative Acceptance Criteria	Quantitative Acceptance Criteria
General	An AOO will not escalate to a more serious plant condition, unless other faults occur independently.	Not applicable.
General	There is no loss of function of any fission product barrier.	Not applicable.
Fuel Rod	Loss of fuel rod mechanical integrity will not occur due to fuel melting.	The calculated maximum fuel center temperature remains below the fuel melting point.
Fuel Rod	Loss of fuel rod mechanical integrity will not occur due to pellet-cladding mechanical interaction.	The cladding strain acceptance criteria defined in Section 5.0 of NEDC-33840. Chapter 4, Subsection 4.2.3.4 describes the code methodology used in

Fission Product Barrier or Fundamental Safety Function	Qualitative Acceptance Criteria	Quantitative Acceptance Criteria
		calculating the cladding strain acceptance criteria.
Fuel Rod	Fuel rod failure will not occur due to overheating of cladding.	The calculated core Minimum Critical Power Ratio (MCPR) ensures that 99.9% of the fuel rods in the core are not susceptible to boiling transition during AOO events. With the reactor steam dome pressure less than 4.72 MPa(g), the calculated reactor thermal power is less than 25% of rated thermal power
Reactor Coolant Pressure Boundary	Design conditions of the reactor coolant pressure boundary are not exceeded during the most severe pressurization transient.	The calculated peak pressure associated with the reactor coolant pressure boundary shall not exceed 110% of the design pressure or 11.38 MPa(g).
Reactor Coolant Pressure Boundary	The reactor coolant pressure boundary maintains sufficient reactor coolant inventory for core cooling.	The calculated reactor water level is maintained at or above the Top of Active Fuel (TAF).
Primary Containment	Containment integrity is maintained. If an AOO results in an energy release to the containment, or loss of containment heat removal, then containment stresses (i.e., pressure and temperature) are limited such that there is no loss of a containment barrier safety function, and thus, the containment remains within its design limit values.	No AOOs result in a significant energy release to containment, or prolonged loss of normal containment cooling. The normal operation limits and conditions are applied to containment, and no AOO containment quantitative criteria is needed.
Long-Term Heat Removal	SSC important for preserving the integrity of the reactor core and the containment are capable of removing residual heat for an extended period both during and after all applicable PIEs considered in	Following AOO events that do not result in shutdown, a controlled condition is achieved. Following AOO events that require shutdown, the core remains shutdown independent of operator action or offsite support

Fission Product Barrier or Fundamental Safety Function	Qualitative Acceptance Criteria	Quantitative Acceptance Criteria
	all Operational States, including AOOs.	for at least 72 hours. AOO events that rely on DL3 mitigation for long-term cooling are capable of providing cooling for at least 72 hours without operator action or offsite support.

Table A-3 below identifies the acceptance criteria for the deterministic safety analysis of AOOs in accordance with subsection 4.3.4 of REGDOC-2.4.1.

Table A-3: Deterministic Safety Analysis Derived Acceptance Criteria for Design Basis Accidents

Fission Product Barrier or Fundamental Safety Function	Qualitative Acceptance Criteria	Quantitative Acceptance Criteria
General	Except for fuel cladding, there is no loss of function of any fission product barrier.	Not applicable.
Fuel Rod	The number of fuel rod failures is conservatively estimated for DBAs.	The calculated number of failed rods does not result in exceeding the applicable radiological dose acceptance criteria.
Fuel Rod	Mechanical fracturing of a fuel assembly under DBA loading conditions does not result in losing the ability to cool the fuel assembly.	The mechanical integrity of the fuel is established from the mechanical and thermal fuel analysis
Reactor Coolant Pressure Boundary	Design conditions of the reactor coolant pressure boundary are not exceeded during the most severe pressurization transient as a result of a DBA.	The calculated peak pressure associated with the RCPB shall not exceed 120% of the design pressure or 12.41 MPa(g).
Reactor Coolant Pressure Boundary	The reactor coolant pressure boundary maintains sufficient reactor coolant inventory for core cooling.	Conformance is demonstrated by meeting the fuel cooling and long-term heat removal criteria.

Fission Product Barrier or Fundamental Safety Function	Qualitative Acceptance Criteria	Quantitative Acceptance Criteria
Primary Containment	Containment pressures and temperatures are maintained below the design values.	The calculated containment pressure does not exceed the design pressure 0.414 MPa(g). The calculated containment shell temperature does not exceed the design temperature 165.6°C.
Primary Containment	The local combustible gas concentrations in the containment are within the range where deflagration or detonation cannot occur.	Containment atmosphere remains sufficiently mixed such that deflagration or detonation thresholds are not exceeded.
Primary Containment	Containment energy management systems are capable of reducing the containment pressure and temperature following a DBA to minimize the release of fission products to the environment and to preserve containment integrity and leak tightness.	The calculated containment pressure reduces to less than 50% of the calculated peak pressure for the most limiting LOCA within 24 hours.
Reactivity Control	Reactivity control required to bring the reactor to cold shutdown is maintained.	Shutdown margin is established to assure that the reactor can be brought subcritical with the highest worth control rod pair withdrawn when the core is in its most reactive condition. The subcriticality value is 0.38% $\Delta k/k$ with the highest-worth control rod pair analytically determined.
Long-Term Heat Removal	SSCs important for preserving the integrity of the reactor core and the containment are capable of removing residual heat for an extended period both during and after all applicable PIEs considered in all operational states, and DBAs.	Long-term cooling is maintained for a minimum of 72 hours independent of operator action and offsite support, and for 30 days with credit for operator actions and on-site resources. For DBA events that result in shutdown, the plant can achieve and maintain safe-shutdown conditions with the average reactor coolant temperature below 215.6°C.

CNSC staff reviewed the dose results provided in subsection 15.7 of the PSAR and concluded that OPG's analyses of the radiological consequences of the analysed events do not exceed the regulatory acceptance criteria, and met the derived acceptance criteria listed in Table A-2 for AOOs and Table A-3 for DBAs, respectively. CNSC staff conclude that the approach used to establish the derived acceptance criteria is consistent with the expectations of REGDOC-2.4.1.

A.1.3.3 Identification, Categorisation, and Grouping of Postulated Initiating Events and Accident Scenarios

Subsection 4.2, *Events to be Analyzed*, of REGDOC-2.4.1 outlines expectations that the licensee use a systematic process to identify events, event sequences, and event combinations that could potentially challenge the safety or control functions of the nuclear power plant. The licensee is also expected to identify events that may lead to the release of fission products, including those related to spent fuel pools and fuel handling systems. Events shall be identified at both the at-power and the shutdown plant states.

The identification and selection of postulated initiating events (PIE) is a fundamental element of safety analyses that use the process of fault evaluation. CNSC staff reviewed OPG's *BWRX-300 Safety Strategy Implementation Process* [R2.4-40] and noted that it included:

- Deterministic PIE Selection: Used to select events for purposes of conducting a deterministic safety analysis. The selected PIEs and fault sequences are allocated to one of three DSA types in a fault list:
    - A PIE List for Baseline DSA (BL-DSA)
    - A PIE or Fault Sequence List for Conservative DSA (CN-DSA)
    - A PIE or Fault Sequence List for Extended DSA (EX-DSA)
- Complex Sequence Selection: Those fault sequences that involve failures of multiple mitigating features not included in the deterministic PIE selection, that have the potential to lead to core damage with a frequency of occurrence or consequence requiring analysis and defence line mitigation function. These sequences are included in the fault list and analysed in the EX-DSA.
- Severe Accident Scenario Selection: Those fault sequences that involve significant core damage which could lead to a breach of containment and release of radioactive materials. The objective of this sequence selection is to identify representative core damage scenarios and define corresponding plant damage states used as the basis for performing the severe accident analysis.

As the BWRX-300 design continues to progress, OPG has committed to providing CNSC staff with regular updates and analysis information for the fault

list and corresponding DSA analyses. CNSC staff will review this information when provided to verify that the DSA continues to evolve with the design and that any changes to the fault list are made according to the safety analyses.

Categories of Events

Subsection 4.2.3, *Classification of Events*, of REGDOC-2.4.1 outlines expectations that identified events be classified into one of the following categories, based on the results of probabilistic studies, historical experience, and engineering judgement:

- AOOs: those events more complex than normal operation manoeuvres with the potential to challenge the safety of the reactor, which could reasonably be expected to happen during the plant lifetime and with a frequency greater than 1E-02 occurrences per reactor-year,
- DBAs: those events not expected to occur during the plant lifetime but are considered in the design, with a frequency of occurrence between 1E-02 and 1E-05 per reactor-year, and
- Beyond Design-Basis Accidents or DECs: those events which may be more severe than, but with a lower probability of occurrence than, DBAs, and with a frequency of occurrence of less than 1E-05 per reactor-year.

In its application and supporting documentation, OPG states that it assigned fault sequences to categories based on their relative frequency of occurrence, and that this categorisation complies with expectations of subsections 4.2.2.5 and 4.2.3 of REGDOC-2.4.1 and subsection 5.4.3 of REGDOC-2.5.2.

CNSC staff review of the supporting documentation noted that OPG used qualitative frequencies as an interim measure through the early design stages to progress the DSA, prior to the availability of mature probabilistic safety analysis information. In addition to the event categorisation frequency, the categorised events are allocated to one of the following DSA types:

- Baseline AOO (BL-AOO), with a primary objective to demonstrate the effectiveness of Defence Line 2 functions,
- Conservative AOO (CN-AOO),
- Baseline DBA (BL-DBA),
- Conservative DBA (CN-DBA), or
- Extended DEC (EX-DEC).

Postulated Initiating Events and Accident Scenarios

OPG has stated that PIEs and event frequencies were determined qualitatively, based on the conceptual design of the BWRX-300, previous BWR generational designs, as well as operating experience of operating BWRs. The PIEs are evaluated in the fault evaluation stage and screened for inclusion in the fault list.

A bounding event selection process is performed for those events that can be initiated at full power, as these events would provide the greatest challenge to implemented fission product barriers.

Bounding events are selected for each event category (i.e., AOOs, DBA, and DECs without core damage), and for each applicable DSA layer (i.e., baseline, conservative, and extended). The events selected for the BWRX-300 are summarised in Table A-4 below.

Table A-4: List of Bounding Events for BWRX-300 Deterministic Safety Analysis (non-LOCA and LOCA)

DSA Layer or Event Category	Fault Type	Event Description
BL-AOO	Decrease in Core Coolant Temperature	Loss of Feedwater Heating (LFWH)
CN-DBA	Decrease in Core Coolant Temperature	Loss of Feedwater Heater (Common Cause Failure)
EX-DEC	Decrease in Core Coolant Temperature	None.
BL-AOO	Increase in Reactor Pressure	Generator Load Rejection or Turbine Trip Closure of Single Main Steam Reactor Isolation Valve (MSRIV) Loss of Condenser Vacuum (LOCV) Loss of Preferred Power (LOPP)
CN-DBA	Increase in Reactor Pressure	Load Rejection or Turbine Tripp Loss of Preferred Power RPV Pressure Control Downscale Closure of All MSRIVs and Feedwater Isolation
EX-DEC	Increase in Reactor Pressure	Closure of Single MSRIV Rejection or Turbine Trip Loss of Condenser Vacuum Loss of Preferred Power
BL-AOO	Reactivity and Power Distribution Anomalies	None

DSA Layer or Event Category	Fault Type	Event Description
CN-DBA	Reactivity and Power Distribution Anomalies	Fuel Loading Error
EX-DEC	Reactivity and Power Distribution Anomalies	All Control Rod Withdrawal At-Power (Common Cause Failure) Inadvertent Single Control Rod Withdrawal at Power
BL-AOO	Increase in Reactor Coolant Inventory	Inadvertant Isolation Condenser Initiation (Single Train)
CN-DBA	Increase in Reactor Coolant Inventory	Feedwater Flow Increase (All Pumps) Inadvertent Isolation Condenser Initiation (All Trains)
EX-DEC	Increase in Reactor Coolant Inventory	None
BL-AOO	Decrease in Reactor Coolant Inventory	Feedwater Pump Trip – Single Pump
CN-DBA	Decrease in Reactor Coolant Inventory	Loss of Feedwater Flow (Common Cause Failure) Reactor Pressure Vessel Pressure Controller Open
EX-DEC	Decrease in Reactor Coolant Inventory (Non-LOCA)	Feedwater Isolation
BL-AOO	Decrease in Reactor Coolant Inventory (LOCA)	None
CN-DBA	Decrease in Reactor Coolant Inventory (LOCA)	Main Steam Pipe Break (Inside Containment) Feedwater Pipe Break (Inside Containment) Large Isolation Condenser Pipe Break (Inside Containment) Small Steam and Liquid Pipe Break (Inside Containment) Large Main Steam Pipe Break (Outside Containment)

DSA Layer or Event Category	Fault Type	Event Description
		Large Feedwater Pipe Break (Outside Containment) Large Isolation Condenser Pipe Break (Outside Containment) Small Breaks (Outside Containment)

CNSC staff review of the PIEs and accident scenarios identified in the table above complies with the expectations of subsection 4.2 of REGDOC-2.4.1.

A.1.3.4 Description and Qualification of Computer Codes Used for Containment Analysis

A.1.3.4.1 Transient Reactor Analysis Code "GE Hitachi" (TRACG)

The Transient Reactor Analysis Code "GE Hitachi" (TRACG) computer code is a GE Hitachi proprietary version of the TRAC code. This code is designed to use advanced one-dimensional and three-dimensional methods to model phenomena important in evaluating the operation of BWRs.

Analyses performed using TRACG have previously been performed to support licensing applications of BWRs in several topic areas, including in analysis of AOOs and in pipe-break scenarios known as LOCAs.

CNSC staff have a memorandum of cooperation with the USNRC and have produced a review of the joint Licensing Topical Report on the applicability of the code to the BWRX-300 reactor. Under this Licensing Topical Report, OPG included the following reference documentation in its application to support the qualification of TRACG:

- NEDE-32176P – *TRACG Model Description (Revision 4)* [R2.4-41]
- NEDE-32177P – *TRACG Qualification (Revision 3)* [R2.4-42]
- NEDC-32725P – *TRACG Qualification for SBWR (Revision 1), Volumes 1 and 2* [R2.4-43]
- NEDC-33080P – *TRACG Qualification for ESBWR Class III (Revision 1)* [R2.4-44],
- NK054-REP-01210-00164 – *TRACG Application for BWRX-300* [R2.4-45].

The developer of the code claims that its models are accurate and can be used to simulate a large variety of test and reactor configurations. These features are intended to allow for a detailed simulation of a variety of BWR phenomena and are described in detail in NEDE-32716 – *TRACG Model Description*.

CNSC staff note that the NEDE-32177 – *TRACG Qualification* document was issued in 2007—several years prior to the initiation of the BWRX-300 design. To address this potential gap in qualification, additional qualification documentation for BWR designs such as the Simplified BWR (SBWR) and the Economic Simplified BWR (ESBWR) were provided.

OPG has stated that the systematic approach for qualification of the TRACG code will be based on major qualification categories including Separate Effects Tests, Component Performance Test, Integral System Effects Tests, Standard BWR Nodalisation and BWR Power Plant Tests. CNSC staff note that this framework for TRACG qualification complies with Canadian regulatory expectations.

Various methods have been used to combine the effects of uncertainties in safety analyses using Monte Carlo simulation techniques. It is used to quantitatively evaluate uncertainty to show margin provided by operating limits. This method used a small number of TRACG runs, sufficient to determine a 95% content and 95% confidence level, by controlling One-Sided Upper Tolerance Limits for TRACG output variables.

CNSC staff conclude that the documents provided by OPG in support of TRACG qualification provide an overview of the qualification of the code for other BWR designs, but do not explicitly consider the BWRX-300 design. CNSC staff noted that the submitted information should be supported by comprehensive, recent, and design-representative experimental data focused on a qualification to the BWRX-300 specific design. Further, the submission should be based on the implementation of natural circulation as the primary driving force for normal operations, and on mitigating accidents with passive systems also using natural circulation.

OPG has committed to comply with the Canadian code validation expectations described in REGDOC-2.4.1 and CSA N286.7 for all codes used in the analysis and design of the BWRX-300. CNSC staff expect OPG to provide additional TRACG qualification documentation, specifically focused on the BWRX-300 design, that addresses the design differences between the BWRX-300 and previous designs as the design progresses.

A.1.3.4.2 Generation of Thermal-Hydraulic Information for Containment (GOTHIC)

The GOTHIC computer code is a general-purpose thermal-hydraulics code used for the design, licensing, safety, and operating analyses of nuclear power plant containment structures.

It is a program for modelling multi-phase, multi-component, fluid flows for performing both containment DBA analysis and analyses to support equipment qualification. It is also used for pressure and temperature calculations, inadvertent system initiation assessments, and analysis of degradation or failures of engineered safety features. It also facilitates the study of non-condensable gases

and stratification, and the calculation of flow field details, within any volume as well as hydrogen distribution under various conditions.

GOTHIC is currently qualified in Canada as a Containment and Severe Accident Industry-Standard Toolset (IST) code. Various GOTHIC-IST versions are used by nuclear power plant operators to support deterministic safety analyses. In the BWRX-300 design, GOTHIC is used to evaluate the containment response to a mass and energy release from the Reactor Pressure Vessel (RPV). The performance of the BWRX-300 Passive Containment Cooling System (PCCS) (see subsection A.2.5.5.4.2 – *The Passive Containment Cooling System (PCCS)*) is also included in the GOTHIC model.

OPG states that GOTHIC is a continuously maintained and improved code that meets software qualification expectations including subsection 4.4.5 of REGDOC-2.4.1 and CSA N286.7. OPG also states that future BWRX-300 containment behaviour analyses may be performed using newer versions of the GOTHIC code, provided the newer versions meet these regulatory expectations. OPG has committed to disposition any variation in results of modelled containment behaviour due to revisions to the GOTHIC code.

CNSC staff conclude that the GOTHIC computer code model is appropriately applied to the BWRX-300 design. Should OPG change the version of the GOTHIC code used for the BWRX-300 analyses, OPG will be required to demonstrate the validation of the updated version to the design of the BWRX-300 reactor. CNSC staff will review any new code versions used to ensure the safety case remains valid.

A.1.3.4.3 Atmospheric Dispersion and Dose Analysis Method (ADDAM)

The ADDAM computer code is intended to calculate the distribution of radiation doses to individuals or to a population, following the airborne release of radioactive material into the environment following a DBA. The dispersion of radioactive material is dependent on the characteristics of the release, existing meteorological conditions, and overall nearby receptor characteristics.

Radiation doses can be calculated for various age groups, organs, receptor types, and receptor locations, and can be classified based on release and exposure pathway. The ADDAM code is used as an Industry-Standard Toolset in the Canadian nuclear industry to perform these calculations and support deterministic safety analyses. OPG states that this code complies with the expectations of CSA N286.7 and CSA N288.2 – *Guidelines for Calculating the Radiological Consequences to the Public of a Release of Airborne Radioactive Material for Nuclear Reactor Accidents*.

CNSC staff conclude that the ADDAM code is appropriately applied to the BWRX-300 design, and that it meets the qualification computer codes expectations in REGDOC-2.4.1 and CSA N286.7.

A.1.3.5 Analysis of Normal Operation Conditions

In OPG's documentation provided to support the analysis described in Chapter 15 of the PSAR, OPG stated it reviewed normal operation deterministic safety analysis to demonstrate that plant parameters are maintained within specified operating limits and conditions (OLC), thereby ensuring that the plant remains within the assumptions documented in the safety analysis. In essence, the normal operation of the plant will be monitored and controlled so that PIEs that could lead to AAOs are mitigated to avoid them progressing to a DBA. OPG has performed preliminary stability analyses and confirmed that the reactor core will remain stable during normal operation.

CNSC staff note that the BWRX-300 design will continue to progress, and that the corresponding safety analysis for normal operating conditions will consequently continue to iterate alongside the design progression. CNSC staff will continue to review the design information, as it becomes available, to ensure that the safety analyses remain compliant with applicable regulatory expectations.

A.1.3.6 Analysis of Anticipated Operational Occurrences

In OPG's documentation provided to support the analysis described in Chapter 15 of the PSAR, OPG stated it performed analyses of PIEs leading to anticipated operational occurrences. OPG has provided the set of PIEs leading to an AOO commensurate with the stage of the design, including assumptions, event sequences, the results of the performance assessment of barriers to fission product release, as well as predicted radiological consequences.

As described above, the dose results provided in subsection 15.7 of the PSAR demonstrate that the radiological consequences of the analysed AOO events do not exceed the AOO acceptance criteria, as expected by subsection 4.4.3 of REGDOC-2.4.1.

CNSC staff note that the design will continue to progress, and that the corresponding safety analysis for anticipated operational occurrences will consequently continue to iterate alongside the design progression. CNSC staff will continue to review the design information, as it becomes available, to verify that the safety analyses remain compliant with applicable regulatory expectations.

A.1.3.7 Analysis of Design Basis Accidents

Subsection A.2.2.5 – *Defence in Depth* describes OPG's proposed defence in depth strategy for the BWRX-300, including the description of Defence Lines (DL).

In the documentation provided to support the analysis described in Chapter 15 of the PSAR, OPG states it performed analyses of design basis conditions of the following:

- Safety analysis under normal operations to ascertain that Defence Line (DL) 1 functionality and measures are effective in preventing failures and meeting dose requirements.
- Safety analysis under AOOs to ascertain that DL2 measures are effective for most PIEs to meet dose acceptance criteria.
- Safety analysis for DBAs to ascertain that DL3 functions are effective in mitigating events and meeting applicable dose acceptance criteria.

OPG also indicated and described the acceptance criteria applicable to the DSA for each identified plant state. The response of the respective DL measures to AOO and DBA PIEs is predicted to be achieved by SSCs designed specifically to mitigate these events and are consequently assigned DL2 and DL3 functions.

CNSC staff have independently reviewed GE Hitachi's design inputs into the TRACG thermal-hydraulic code as well as the use of the TRACG outputs as boundary conditions into the GOTHIC containment computer code, as described in NK054-REP-03555-00001 – *BWRX-300 Containment Evaluation Method* [R2.4-38]. CNSC staff used these codes to independently reproduce and verify the provided assessment, as well as perform a sensitivity analysis for large and small LOCA events.

CNSC staff also analysed the plant model configuration, evaluation of reactor phenomena, the initial and boundary conditions, modelling results, and compliance with DSA acceptance criteria in the simulation of large and small LOCA events. CNSC staff's review found that, commensurate with the state of the BWRX-300 design and versions of computer codes, the modelling, and results of small and large LOCA events using the TRACG code are acceptable to determine the mass and energy releases as a boundary input to the GOTHIC code. How uncertainties in the analyses are addressed in the safety analysis models remains unclear to CNSC staff.

CNSC staff note that this information will continue to evolve as the design of the BWRX-300 reactor continues to mature. OPG will be required to provide further information for CNSC staff review against applicable regulatory expectations for DSA in REGDOC-2.4.1 and REGDOC-2.5.2 as it becomes available.

Performance of the Isolation Condenser System and Overpressure Protection Capacity

In its application, OPG describes the intention of the Isolation Condenser System (ICS) is to remove decay heat after any reactor isolation and shutdown event during normal operations. OPG also states that the spurious actuation of safety-relief valves normally attributed to a LOCA event in existing reactors is eliminated, since there are no safety-relief valves implemented in the BWRX-300 reactor design.

OPG states that the decay heat removal function of the ICS will limit the increase in steam pressure and maintain the RPV pressure and water inventory at an acceptable level, and that consequently, the ICS also provides a reactor overpressure protection function. Subsection A.2.5.4.8 – *Overpressure Protection* provides a more detailed description of this function.

A.1.3.8 Analysis of Design Extension Conditions

OPG conducted a deterministic safety analysis under design extension conditions (DEC) without leading to core damage, to demonstrate that releases of radioactive material following a PIE are within acceptable limits. OPG states that a probabilistic safety assessment approach was used to support the determination of no core damage.

Results of Analysis of Design Extension Conditions without Core Damage

Subsection 15.7 of the PSAR describes the analysis and DSA results for DECs without leading to core damage. CNSC staff reviewed the analysis in the documentation provided to support Chapter 15 of the PSAR and noted that it included:

- Multiple failures, defined as complex sequences identified in the Level 1 PSA, or as a PIE with a common-cause failure (CCF).
- AOOs and DBAs with postulated failures of DL2 and DL3 functions analysed in the Extended Deterministic Safety Analysis (EX-DSA). In the event of postulated failures of DL2 and DL3 functions, the DBA acceptance criteria were used as screening criteria to evaluate the possibility of core damage.
- Low-frequency events.
- Non-reactor fault sequences (e.g., spent fuel pool accidents) that were analysed in the Level 1 PSA.

Results of Analysis of Design Extension Conditions with Core Damage

Design Extension Conditions that have the potential to lead to core damage are included as part of the PSA and Severe Accident Analysis. Subsection 8.6.1, *Containment: General*, of REGDOC-2.5.2 states that:

"*Containment shall also assist in mitigating the consequences of DECs. In particular, the containment and its safety features shall be able to perform their credited functions during DBAs and DECs, including melting of the reactor core. To the extent practicable, these functions shall be available for events more severe than DECs.*"

CNSC staff reviewed the severe accident analysis information provided in Chapter 15 of the PSAR and noted that it did not contain a sufficiently detailed analysis to demonstrate compliance for DSAs in REGDOC-2.4.1. CNSC staff

acknowledge that the safety analyses will iterate as the design progresses. Although further analysis is required, OPG has committed to provide further updates and information as the design continues to evolve and safety analysis continues to iterate. CNSC staff will continue to review the provided information to verify that the analyses meet the applicable regulatory requirements.

A.1.4 Criticality Safety

CNSC regulatory document REGDOC-2.4.3 – *Nuclear Criticality Safety* [R2.4-46] sets out expectations for nuclear criticality safety, and includes information on the prevention of criticality accidents in the handling, storage, processing, and transportation of fissionable materials.

CNSC staff reviewed the nuclear criticality safety analyses documented in the *BWRX-300 Preliminary Safety Analysis Report* [R2.4-1] (PSAR) as well as applicable supporting documentation such as NK054-REP-01210-00191 – *BWRX-300 Darlington New Nuclear Project (DNNP) Out of Core Criticality Safety Analysis Demonstration* [R2.4-47].

Prevention of Ex-Core Criticality Accidents

Section 2, *Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors*, of REGOC-2.4.3 provides expectations involving operations with fissionable materials, and prevention of criticality accidents, outside of the reactor core.

CNSC staff's review of the supporting documentation noted that OPG has assumed a margin of subcriticality consistent with expectations of REGDOC-2.4.3. OPG also selected a set of credible abnormal conditions that provide a representative set of scenarios, estimated initiating event frequencies, and identified probable criticality safety controls with associated failure probabilities. The methodologies used to select and analyse the set of abnormal conditions are consistent with expectations presented in Appendices A and G of the REGDOC-2.4.3.

OPG conducted analyses of subcriticality margins under normal and credible abnormal conditions for a representative fuel matrix. These results are anticipated to be comparable to the values from the final fuel design due to similarities in neutronic performance between the reference and final fuel designs. CNSC staff determined that OPG demonstrated an adequate margin of subcriticality under both normal and credible abnormal conditions, as per the expectations in REGDOC-2.4.3. This representative analysis is sufficient as the indicated margins of subcriticality are greater than the minimum specified.

CNSC staff note that this representative set of credible abnormal conditions, and the subcriticality analysis, is sufficient for purposes of the PSAR. An updated analysis based on the final design will be required for updated Safety Analysis Reports, which will be provided for CNSC staff review.

Protection of the Public Against the Consequences of Criticality Accidents

Section 16, *Nuclear Criticality Accident Emergency Planning and Response*, of REGDOC-2.4.3 provides expectations for the emergency management and protection of the public in the event of a criticality accident.

OPG has postulated a criticality accident and determined its total estimated fission yield in accordance with REGDOC-2.4.3 and guidance presented in International Standards Organisation (ISO) document 16117 – *Nuclear Criticality Safety: Estimation of the Number of Fissions of a Postulated Criticality Accident* [R2.4-48].

CNSC staff determined that OPG performed an analysis of the consequences of such an event using a state-of-the-art code, validated for the assessment of criticality accidents as per the expectations of CSA N286 – *Management System Requirements for Nuclear Facilities*, and CSA N286.7 – *Quality Assurance of Analytical, Scientific, and Design Computer Programs* [R2.4-36].

CNSC staff conclude that OPG has demonstrated that the consequences of a postulated criticality accident scenario do not exceed the generic criterion that would trigger a public evacuation, described in REGDOC-2.4.3.

Protection of Plant Personnel Against the Consequences of Criticality Accidents

Based on the analysis OPG conducted to demonstrate compliance with criteria set in section 3, *Criticality Accident Alarm System*, of REGDOC-2.4.3, OPG has indicated that:

> "*Effective warning of high radiation following a highly unlikely accidental criticality event will be accomplished by fixed or portable area gamma monitors, and also by personal exposure dosimetry instrumentation, which is required to be worn by the personnel working in these areas where fuel handling occurs.*"

CNSC staff determined that this commitment, and the identified set of instrumentation and equipment worn by personnel in the fuel handling areas, is sufficient for purposes of the PSAR. An updated analysis based on the final design will be required for the updated Safety Analysis Reports, to substantiate a justification expected by subsection 3.3.1 of REGDOC-2.4.3.

In conclusion, CNSC staff conclude that the set of analyses and equipment described in OPG's application and supporting documentation and summarised above, related to criticality safety, is sufficient for the purposes of a licence to construct. Further detailed information is expected as the design of the BWRX-300 reactor progresses, and updated analyses based on the final design will be required for updated Safety Analysis Reports and the licence to operate application, should this project proceed.

CNSC staff conclude that OPG has demonstrated compliance with the criticality safety expectations of REGDOC-2.4.3.

A.1.5 Severe Accident Analysis

Subsection 4.4.6, *Severe Accident Analysis*, of REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility* outlines expectations that an application for a licence to construct include a severe accident analysis that demonstrates compliance with REGDOC-2.4.1 – *Deterministic Safety Analysis* and REGDOC-2.4.2 – *Probabilistic Safety Assessment (PSA) for Reactor Facilities*. The application should provide detailed information concerning the analysis to identify accidents that can lead to significant core damage or off-site releases of radioactive material.

The application should also describe the evaluation carried out on capabilities of complementary design features to meet design criteria, in accordance with subsections 7.3.4.1 and 8.6.1 of REGDOC-2.5.2 – *Design of Reactor Facilities*.

The purpose of severe accident analysis is to evaluate the ability of the reactor to withstand challenges posed by beyond design-basis accidents (BDBA), and to identify any potential plant vulnerabilities. Severe accident analyses are also intended to support the development of an accident management program for BDBAs and other severe accident conditions and provide input for off-site emergency planning.

Safety analyses are performed to confirm that acceptance criteria and safety goals, documented in REGDOC-2.5.2, are met and to demonstrate the effectiveness of measures for preventing accidents and mitigating radiological consequences should an accident occur.

CNSC staff reviewed the severe accident analysis documented in Chapter 15 of the PSAR as well as supporting documentation. OPG has committed to provide the following information to address some of CNSC staff's comments regarding severe accident analysis for the BWRX-300.

- A Complete source term analysis, including the nature of the quantification of the source term, that is inclusive of the DEC scenarios that lead to severe core damage.

- A demonstration of compliance with the methodology described in subsection 4.4, *Safety Analysis Methods and Assumptions*, of REGDOC-2.4.1, and a demonstration of compliance with the documentation process in subsection 4.5 of REGDOC-2.4.1.

- The analyses conducted regarding severe accidents in accordance with the applicable expectations of REGDOC-2.4.1, REGDOC-2.5.2, and REGDOC-1.1.2.

OPG has identified several DECs with features similar to those added post-Fukushima at existing reactors. As the safety analysis iterates, OPG will be required to complete the source term associated with these identified DECs and allow for the incorporation of design changes and PSA insights. Additionally, OPG will be required to develop an accident management program, in accordance with REGDOC-2.3.1 – *Accident Management*, as part of its licence to operate application, should the project proceed.

OPG stated that at the current state of design progression, there are currently no formal detailed reports available for each analysed event.

Deterministic safety analyses are required to support the design phase, and such analyses must be performed prior to the commencement of construction. Sufficiently detailed deterministic safety analysis documentation is required during the design of the reactor, to ensure that barriers to fission product release are effective, and that the design can prevent and mitigate consequences of accidents should they occur.

OPG will be expected to provide sufficient BDBA deterministic safety analysis documentation to demonstrate compliance with subsection 4.2 of REGDOC-2.4.1.

A.1.6 Event Mitigation

Subsection 4.4.8, *Event Mitigation*, of REGDOC-1.1.2 outlines expectations that an application for a licence to construct provide, to the extent practicable, the results of a review of event mitigation measures in accordance with REGDOC-2.3.2 – *Accident Management* [R2.4-49].

REGDOC-2.3.2 sets out the expectations for the development, implementation, and validation of integrated accident management for reactor facilities. Accident management is a demonstration of a commitment to the defence in depth approach and is an important component to ensure that a licensee's overall capabilities to ensure that risks from nuclear reactors remains as low as reasonably achievable.

OPG states that the BWRX-300 defence in depth design (see subsection A.2.2.5 – *Defence in Depth*) has a direct effect on mitigation of accidents. In addition, the BWRX-300 is designed with passive safety features that automatically call upon Defence Line 3 systems reliant solely on passive phenomena to mitigate a design-basis event—in other words, the BWRX-300 does not require manual operator action to mitigate design-basis events.

Based on the design of the BWRX-300 and a safety strategy framework that integrates Defence Lines and the defence in depth concept, CNSC staff note that the design has incorporated operating experience as well as deterministic, risk-informed, and performance-based analyses. OPG states that these safety analyses demonstrate that the plant design meets underlying safety objectives and acceptance criteria from REGDOC-2.3.2 for mitigation of accidents, and that it confirms the regulatory safety objectives from REGDOC-2.5.2 are met.

OPG has committed to provide further detailed information regarding the probabilistic safety and severe accident assessments for the BWRX-300, as the design and safety assessments continue to iterate. CNSC staff will review the provided documentation as it is available to verify that the PSA meets regulatory expectations.

A.1.7 Summary and Conclusions

OPG has used the safety analysis results for deterministic safety analyses to demonstrate adherence to the general nuclear safety objectives defined in Chapter 3 of the PSAR. The safety analyses presented in Chapter 15 of the PSAR follows a safety strategy framework that includes Hazards Analysis, a Deterministic Safety Analysis, and a Probabilistic Safety Assessment.

OPG has committed to providing additional information as the design progresses. CNSC staff have identified these commitments in Appendix D.2. CNSC staff will review these submissions to ensure OPG meets all regulatory expectations. OPG will be required to submit an updated Safety Analysis Report should this project proceed to the licence to operate phase.

Summary and Conclusions: Probabilistic Safety Assessment (PSA)

From a review of the preliminary PSA results CNSC staff conclude that the safety goals established in REGDOC-2.5.2 for CDF and LRF have been conditionally satisfied and will continue to be met as the design progresses. CNSC staff noted that important analysis information has not been provided at this stage of the design. In addition, the overall seismic risk is the dominant contributor to overall plant risk, as it contributes most of the CDF and LRF risks.

CNSC staff note that these results are preliminary and are used to continue to progress the design of the BWRX-300, that subsequent PSAs could result in variances in the calculated CDF or LRF risks, which will be further reflected in updated safety assessments as the design progresses.

Safety analysis is an iterative process and, as outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*, OPG has committed to provide further detailed safety analysis information as it becomes available. CNSC staff will continue to review this information to verify that the safety analyses are conducted in accordance with the regulatory expectations in REGDOC-2.4.2 – *Probabilistic Safety Assessments (PSA) for Reactor Facilities*.

Summary and Conclusions: Deterministic Safety Analysis (DSA)

The Deterministic Safety Analysis for the BWRX-300 consists of three layers of evaluation: a Baseline, Conservative, and Extended DSA, which complies with Canadian and international guidelines and requirements. Postulated initiating events and accident scenarios are identified early in the design, following event

frequencies based on system design, designs of similar systems, as well as operating experience. Important event groups are identified and are classed as bounding events for each event category—for example, for design-basis accidents, the bounding event selection for LOCAs consist of two categories: a large break inside and outside of containment, as well as small breaks.

CNSC staff have reviewed the specific Containment evaluation methodologies and assessments, which OPG has used to demonstrate the safety response of the BWRX-300 containment structure during LOCA conditions. CNSC staff independently repeated provided TRACG calculations and performed a limited sensitivity analysis using the provided data.

The content of the PSAR on the approach of a DSA to non-LOCA and LOCA events generally follows the established CNSC and international requirements and guidelines. The DSA is reflective of the state of the design on which the PSAR was based. CNSC staff note that further detailed information will be required as the design and safety assessments progress. Further information should be supported by a comprehensive, recent, and design-representative experimental dataset suitable for the qualification of the TRACG code to the BWRX-300 design, as described in subsection A.1.3.4.1 – *Transient Reactor Analysis Code "GE Hitachi" (TRACG)*.

Additionally, CNSC staff noted that there is a lack of experimental and research documentation supporting the evolution of the design, that there is additional information required to support code maintenance and development during this evolutionary period, and there is additional information required to support analyses regarding the phenomena and experiments determined by the PIRT that support the BWRX-300 design during this evolutionary period. However, CNSC staff are continuing to review information provided by OPG to address these concerns as part of the ongoing review and qualification of the TRACG code.

A.2 PHYSICAL DESIGN

CNSC staff's review of the design of the BWRX-300 reactor and plant, based on the expectations of REGDOC-1.1.2 and version 1 of REGDOC-2.5.2 – *Design of Reactor Facilities* [R1-8] is described in the subsections below.

A.2.1 Site Characterisation

Paragraph 5(b) of the *Class I Nuclear Facilities Regulations* require that an application for a licence to construct contain a description of the environmental baseline characteristics of the site and surrounding area.

Subsection 4.5.2, *Site Characterisation*, of REGDOC-1.1.2 further explains this requirement by stating that the application should refer to, or summarise, the information submitted in any relevant environmental review or licensing documentation, including environmental assessments or previous licence applications. The results of site characterisation are used in the design of the facility and its supporting safety analyses, and therefore the application should confirm the site characteristics, including for external events, and assess the effects of any updated information.

A.2.1.1 Site Location and Topography

The DNNP site is located to the east of the existing Darlington Nuclear Generating Station (DNGS), located in the Municipality of Clarington, in Ontario, approximately 65 kilometres east of the City of Toronto, on the northern shore of Lake Ontario. The site itself consists of approximately 0.18 square kilometres (180 hectares) of land, bounded to the north by Energy Drive, to the south by Lake Ontario, to west by the Holt Road, and to the east by the St. Marys Cement plant. The site is also bisected by the Canadian National Railway (CNR) line in an east-to-west direction.

The DNNP site is situated in an undulating to moderately rolling glacial till plain. The previously irregular terrain has been graded for the existing DNGS to an elevation of about 78 metres above the Canadian Geodetic Datum (CGD). The surface elevation for the DNNP site rises towards the north, with a mean elevation of 100 metres CGD immediately south of the CNR tracks. To the north of the railway tracks, the terrain is irregular with an elevation ranging from 98 to 106 metres CGD. For the DNNP, the terrain is planned to be graded to a finished elevation of 88 metres CGD.

Towards the east, the site rises from an approximate elevation of 80 metres CGD at the southwest corner to 88 metres CGD just north of the shoreline bluff, along a horizontal distance of about 400 metres, to an elevation of 102 metres at the boundary of the Darlington Creek watershed, before then sloping down to its main branch near the eastern boundary of the site.

A higher ridge, starting from the shoreline just east of Raby Head, extends diagonally across the site in a northwesterly direction, with elevation of up to 15 metres above the surrounding terrain. Offshore from the site, the Lake Ontario bottom gradually slopes away from the shore reaching a depth of about 6 metres at 425 metres from the shore, and a depth of 14 metres approximately 1.2 kilometres from the shore.

A.2.1.2 Atmospheric and Meteorological Characteristics

As described in CMD 24-H2 [R1-2], the ambient air quality has generally improved in Ontario, as compared to the conditions documented in previous project licensing stages, due primarily to the shutdown of coal-fired power plants and government programs and initiatives. Staff note that current air quality trends continue to indicate that smog is not a concern in the York-Durham Region; however, the region experienced a short-term deterioration in air quality in June 2023 due to particulates in air from forest fires.

The area in which the DNNP is located displays a humid continental climate with four distinct seasons. Based on a review of the Canadian Climate Normal data spanning the 1981-2010 period, staff note the highest monthly average regional and local temperatures occurred in July, and the lowest monthly average occurred in January. The highest temperatures recorded at Bowmanville and Toronto are 36 ^{o}C and 40.6 ^{o}C, respectively, whilst the lowest ever-recorded temperatures are -34 ^{o}C, -32.8 ^{o}C, and -39.4 ^{o}C at Bowmanville, Toronto, and Belleville, respectively. The temperatures at the DNNP are anticipated to increase by up to 7.2 ^{o}C by the year 2100 when taking climate change models into consideration [R2.4-14].

Subsection A.1.1.2.7 – *Consideration of Climate Change Impacts* provides more detail about the analysed climate change predictions and a description of the predicted climate change models.

The regional mean precipitation was highest in August and lowest in February, whist the local mean precipitation was highest in September and lowest in February. The mean annual precipitation is 878 millimetres and 800 millimetres in Oshawa and Toronto, respectively, whilst the daily maximum precipitation in these locations is 88.6 and 79.3 millimetres. The total and maximum 24-hour precipitation at the DNNP site are anticipated to increase by up to 25% by the year 2100, when taking climate change models into consideration.

Wind speed measurements have been recorded from the meteorological tower at the Darlington Nuclear (DN) site, at a height of 10 metres. Based on the 2021 wind speed data collected, the average wind speed was approximately 2.4 metres per second (m/s), and wind calms were reported 37% of the time. The prevailing winds were from the north-westerly quarter (9.6% of the time), and from the west (8.9% of the time).

A.2.1.3 Geology and Geotechnical Data

The regional and site geology in the area where the DNNP site is located is characterised by upper and lower till layers with predominant glacial deposits between these layers, overlaying bedrock. The glacial deposits are associated with the Oak Ridges Moraine.

As described in the PSAR [R2.4-1], and in Chapter 2, *Site Characteristics* [R2.5-1], the general stratigraphic units encountered at the DNNP site, based on borehole logging data in descending order, are summarised in Table A-5 below.

Table A-5: In-Situ Soil Units and Their Thickness under the BWRX-300 Powerblock

Soil Units	Reactor Building Average (metres)	Reactor Building Range (metres)	Powerblock Average (metres)	Powerblock Range (metres)
Unit 1: Topsoil and/or Fill	1.25	0.61 – 2.13	1.81	0.61 – 3.28
Units 2a and 2b: Surficial glaciolacustrine deposits	1.73	0.61 – 3.81	2.32	0.00 – 6.09
Unit 3: Upper till	6.24	1.07 – 8.87	6.01	0.00 – 9.06
Units 4a and 4b: Intermediate glaciolacustrine deposits	9.32	0.00 – 14.48	9.78	0.00 – 14.48
Unit 5: Lower Till	2.29	1.36 – 2.98	3.78	1.36 – 6.63

A.2.1.4 Hydrology

CNSC staff note that surface drainage at the DN site is divided by the CNR line running across the site. The northwest portion of the site has been modified from its natural condition during the previous construction of the DNGS, and currently drains south into various outlets including the DNGS forebay, and west towards Tooley Creek. The north-central area and the northeast portion (i.e., the areas east of Holt Road) drain south into the CNR right-of-way and then eastward towards the Darlington Creek.

the area south of the CNR line generally slopes toward Lake Ontario, with the southwestern section being the location of the existing DNGS site and is the topographical low area of the entire DN site. The southeastern section contains the DNNP site, which also generally drains south toward Lake Ontario.

The water level of Lake Ontario has been fully regulated since 1960 to diminish shoreline damages along the shores of the Lake and the St. Lawrence River, with the lowest water level recorded at 73.7 metres[3]. The water level under normal conditions is between 62.5 and 73.7 metres. CNSC staff note there is very little net current along the northern shore of the lake; however, the current in the nearshore region flows in an overall easterly direction and is influenced by brief patterns of strong winds exerting stress at the water surface. The current velocities for all directions recorded between the 2012-2016 period typically ranged from about 9 to 18 centimetres per second (cm/s) and were typically slower in the spring and early summer seasons (i.e., May through to June) than during the late summer, autumn, and winter seasons (i.e., August through to April).

A.2.1.5 Hydrogeology

Groundwater Flow

CNSC staff note that the regional groundwater flow, and the groundwater flow at the DNNP site, generally follows the topography from the higher terrain elevations in the north to the lower elevation terrain towards the south. This flow is generally driven by recharge from rainfall and snowmelt infiltration across the area, and at higher elevations along the Oak Ridges Moraine north of the DNNP site, with Lake Ontario as the ultimate discharge point. The shallow groundwater system at the DNNP site deviates from this flow pattern near surface water features and local recharge areas.

Based on a review of the 2021 site geotechnical investigation, CNSC staff note that groundwater flow patterns at the DNNP site have been characterised into three hydro-stratigraphic units: Unit 3 ‘shallow groundwater,’ Units 4 and 5 ‘intermediate groundwater,’ and Units 6a and 6b ‘groundwater in bedrock.’ The groundwater flow direction in the upper and lower till layers (i.e., Units 3 and 5) is inferred to be in a southwesterly direction, and towards the south-southeast in the intermediate glaciolacustrine (Unit 4a) and shallow bedrock layers (Units 6a and 6b). The groundwater level at the site is anticipated to be present between an elevation of approximately 80 to 86 metres CGD, which corresponds to subsurface depths of about 2 to 8 metres below the finished facility grade of 88 metres CGD.

Groundwater Quality

CNSC staff previously reviewed the updated groundwater baseline data, for the period up to and including 2018, as part of the renewal application for OPG’s existing Licence to Prepare Site, including volatile organic compounds (VOC) and other substances. OPG has prepared and submitted groundwater monitoring reports covering the years 2019 – 2021, which analysed the groundwater for contaminants of potential concern (COPC) such as tritium, benzene, toluene, ethylbenzene, xylene, and petroleum hydrocarbons. CNSC staff review of these

[3] This surface water level was taken from statistical data recorded at the Cobourg, Ontario water station.

groundwater monitoring reports determined that the quality of the groundwater at the DNNP remains consistent with the data presented in previous licensing applications.

Groundwater samples were collected during the 2021 geotechnical site investigation for the powerblock area, and submitted for analysis to compare against Table 2, *Table of PWQOs and Interim PWQOs*, of the *Provincial Water Quality Objectives* (PWQO) [R2.5-2] published by the Ontario Ministry of Environment, Conservation, and Parks (MECP). CNSC staff reviewed these results and noted that some samples exhibited elevated concentrations of total metals, dissolved metals, phenols, and toluene above the respective PWQO, as well as selected samples exhibiting a pH outside of the acceptable range of 6.5 to 8.5.

The groundwater at Darlington Nuclear site is not potable and not used for drinking. Should the Commission issue a licence to construct, OPG will be required to implement and maintain a groundwater monitoring program during construction, in accordance with CSA N288.7 and in compliance with permits issued by the MECP. OPG is expected to monitor the dewatering discharge rate and confirm that groundwater discharged from the dewatering system meets Provincial guidelines.

A.2.1.6 Biological Data

Vegetation Communities

The DN site is located within the Niagara portion of the Deciduous Forest Region, where the natural forest vegetation is dominated by broadleaved deciduous trees. However, on a regional basis, much of the area has been cultivated over the past century and the resulting land use changes have propagated numerous anthropogenic vegetation communities. The dominant vegetation cover surrounding the DN site corresponds to agricultural use, including row crops and pastureland. Some anthropogenic vegetation communities, such as cultural woodland, plantations, thickets, and meadow features are in isolated pockets or are located adjected to natural vegetation communities and are undergoing ecological succession.

Most vegetation communities at the DN site are developing from previous land uses and are not mature. The natural vegetation community classes at the DN site include bluffs, beaches, and forests; however, much of the site vegetation can be characterised as cultural communities such as cultural meadows, thickets, and woodlands (including plantations) that resulted from cultural or anthropogenic disturbances. Due to the successional nature of the vegetation communities, measurable change can occur over a relatively short timespan.

Wildlife Habitat

Wildlife habitat is associated with vegetation communities, and natural and developed areas found within the DN site. Across the region, over 350 bird species and 50 mammalian species have been identified, as well as several reptiles, amphibians, and insect species of interest.

As described in OPG document NK054-REP-01210-0001 – *DNNP Supporting Environment Studies* [R2.5-3] and discussed in CMD 24-H2, there have been several terrestrial species at risk identified on the DN site, including: Butternut tree, Monarch butterflies, Least Bittern, Peregrine Falcons, Short-eared Owl, Common Nighthawk, Whip-por-will, Eastern Wood Pewee, Bank Swallows, Barn Swallows, Bobolink, Eastern Meadowlark, Snapping Turtle, Little Brown Myotis, Tri-Coloured Bat, and the Northern Myotis bat.

Within the DN site, most connectivity for wildlife currently exists north of the CNR line. Ponds or other surface water features near or removed from the CNR line contribute to enhancing this connectivity for some wildlife species. The Raby Head Marsh, located on the St. Marys Cement property, and the constructed ponds including the Treefrog, Dragonfly, and Polliwog ponds along with associated natural features on the site, also provide potential pathways for some species. However, staff note that the presence of Highway 401 compromises north-south connectivity between the DN site and other local areas to the north.

Aquatic Habitat

Aquatic habitats at the DN site include tributary watercourses and ponds, as well as the adjacent areas of Lake Ontario. These habitats support aquatic plant and animal communities that vary depending on the habitat under consideration, including species such as periphyton, phytoplankton, benthic invertebrates, zooplankton, and fishes. Aquatic species at risk identified near the DN site include the American Eel, the Lake Sturgeon, Atlantic Salmon, and Deepwater Sculpin [R2.5-3].

The three artificially constructed ponds (i.e., the Treefrog, Dragonfly, and Polliwog ponds) as well as the intermittent tributaries to the Darlington Creek and Lake Ontario do not support fish and are thus not considered as direct fish habitat. Since they are intermittent along most of their reaches, aquatic communities in these ponds are limited.

Aquatic Communities – Plankton

The periphyton community near the DN site is dominated by attached algae (*Cladophora sp.*). Underwater video habitat monitoring consistently shows abundant attached algae, often attached to *dreissenid* mussels, but also on pebble-sized or larger rocks in the nearshore environment. Aquatic plants are generally not present in the nearshore area, with macrophytes only noted within the DNGS forebay during a 2010 survey.

Phytoplankton and zooplankton in the nearshore environment occupy the water column and are distributed by ambient current conditions. A seasonal variation in plankton species' composition and their relative abundances has been observed to occur near the DN site.

Aquatic Communities – Benthic Invertebrates

CNSC staff note that the nearshore environment of Lake Ontario at the DNNP site is characterised by hard substrates and is a high-energy environment, supporting a limited density and diversity of benthic invertebrates that occur mainly in shallow areas (i.e., less than 35 metres depth). Chironomids and amphipods are major components of the nearshore benthic community. Entrainment studies conducted for the entire DN site lists copepods and *cladocerans* as the most abundant susceptible invertebrate taxa, followed by spiny water fleas, rotifers, and amphipods, as documented in NK38-REP-07730-10020 – *Fish Impingement Sampling at Darlington Nuclear Generating Station* [R2.5-4]. Benthic invertebrates identified during a 2015-2016 entrainment study of the offshore DNGS intake, at a 10-metre depth, included primarily *Echinogammarus* and other amphipods (likely *Gammarus*). Together, these amphipods accounted for approximately 94% (approximately 1.4 billion) of the estimated benthic invertebrates entrained annually at the DN site.

Invasive zebra mussels (*dreissena polymorpha*) and quagga mussels (*dreissena bugensis*) have colonised the nearshore area of Lake Ontario and influence local benthic habitat and productivity. The presence of these mussels has altered nutrient flow, food webs, and productivity in Lake Ontario, which has in turn resulted in a proliferation of attached algae such as *Cladophora* along the shoreline. Mussels provide a food source for the Round Goby, another invasive species, which is now very common in the nearshore environment at the DN site. Mussels have also been linked to the collapse of the *Diporeia*, a native amphipod that previously accounted for more than 80% of the total benthic production in Lake Ontario and was a critical component of the diets for most benthic fishes.

Staff note that between 2012 and 2013, dreissenid mussels (*Dreissenia sp.*) were found to be broadly distributed in waters of 10 to 30 metres deep. The highest concentrations were observed within inshore waters at a depth of 12 metres. In 2016 and 2018, all mussels were identified as quagga mussels, which has effectively replaced the zebra mussel species in the nearshore lake environment. The quagga mussels were found in high numbers at nearshore locations with a hard substrate.

Aquatic Communities – Fish

More than 90 species of fish are known to inhabit Lake Ontario, with almost all of these species using the nearshore waters of the lake for spawning, rearing, feeding, and migrations. To date, CNSC staff note that 55 species have been

documented within the vicinity of the DN site through gillnetting, electrofishing, minnow trapping, impingement, entrainment, and larval sampling studies.

The fish community near the DN site is relatively diverse and seasonally dynamic due to the presence of species associated with pelagic, nearshore, tributary, coastal marsh, and embayment habitats. Although this community is diverse near the DN site, the density of fish tends to be low. The seasonal abundance of many of the species may be related to the relatively short periods associated with inshore spawning migrations or may extend throughout seasons when water temperature and weather conditions are favourable for nearshore foraging.

CNSC staff note that fish community studies conducted near the DN site during the 2009-2013 and 2018-2019 years indicated that the fish species commonly present included:

- Alewife (*Alosa pseudoharengus*);
- Round Goby (*Neogobius melanostomus*);
- Round Whitefish (*Prosopium cylindraceum*);
- Lake Trout (*Salvelinus manaycush*);
- Spottail Shiner (*Notropis hudsonius*);
- White Sucker (*Catostomus commersonii*);
- Brown Trout (*Salmo trutta*);
- Walleye (*Sander vitreus*);
- Rainbow Smelt (*Osmerus mordax*); and
- Salmonid species.

Specifically, as identified in NK054-REP-01210-0001 [R2.5-3], the dominant species collected in the spring and summer were Alewife and Round Goby species, whilst the dominant species in the autumn were Lake Trout and White Sucker.

The Darlington Creek supports a warmwater fish community. A habitat assessment of the Creek was conducted in the spring of 2009 and indicated that the quality varied considerably along the Creek, with the higher quality habitat found in the upper reaches, and the lower quality habitat found in the lower reaches of the Creek near the St Marys Cement entrance to the Lake. Historical data compiled for Darlington Creek confirmed the presence of ten species between 1998 and 2009, including:

- Common Carp (*Cyprinus carpio*);
- White Sucker;
- Brook Stickleback (*Culaea inconstans*);
- Pumpkinseed (*Lepomis gibbosus*);

- Bluntnose Minnow (*Pimephales notatus*);
- Fathead Minnow (*Pimephales promelas*);
- Blacknose Dace (*Rhinichthys obtusus*);
- Longnose Dace (*Rhinichthys cataractae*);
- Creek Chub (*Semotilus atromaculatus*); and
- Rainbow Trout (*Onchorhynchus mykiss*).

The quality of the habitat in Coot's Pond was sufficient to support one small fish species: the Northern Redbelly Dace. Coot's Pond was initially intended to be fish-free to encourage amphibian production. The Northern Redbelly Dace had become established and had become abundant in the pond. Although this species has not been directly observed in biodiversity studies in recent years [R2.5-5], an abundance of fish fry had been observed in 2019, and in 2018 cormorants and terns were occasionally foraging, indicating fish were present. The presence of the Northern Redbelly Dace is consistent with a habitat of this type, as this species is a common inhabitant of wetlands and beaver ponds.

A.2.1.7 Radioactivity and Hazardous Substances

Baseline Ambient Radioactivity

Baseline ambient radiation and radioactivity collectively includes an assessment and characterisation of the following:

- The atmospheric environment, including gamma radiation, gaseous radioactivity, and radioactive particulate in air and precipitation;
- The surface water environment, including radioactivity in Lake Ontario, in local streams, and nearby municipal water supply plants;
- The aquatic environment, including radioactivity in sediments and in fish;
- The terrestrial environment, including radioactivity in vegetation, animals, and foods;
- The hydrogeological environment, including radioactivity in soils, shallow wells recharged precipitation, and deep wells;
- Radiation dose to members of the public; and
- Radiation dose to workers, including radiation doses to nuclear energy workers and other workers on the DN site. Subsection 2.6.2.2 – *Worker Dose Control* describes the methodology OPG intends to ascertain occupational exposures to workers on the DN site during the proposed construction licence period.

The baseline radiation and radioactivity studies include the natural background radiation, background from anthropogenic sources (e.g., fallout from nuclear testing and releases from other nuclear activities), and releases from the nearby DNGS.

OPG monitors radiation and radioactivity through its Environmental Monitoring Program for the entire DN site. The results of this monitoring are published annually and made available to the public. As described in section 4 of OPG report N-REP-03443-10027 – *2021 Results of Environmental Monitoring Programs* [R2.5-6], the annual public dose resulting from activities on the Darlington site was 0.60 micro-Sieverts, represented by the adults of the Farm critical group. CNSC staff note that this dose is < 0.1 % of the regulatory dose limit of 1,000 µSv per year defined in the *Radiation Protection Regulations* for a member of the public.

Between the period of 2016 to 2021, public dose estimates for critical groups near the DN site are at most 0.08% of the regulatory public dose limit, and approximately 0.06% of the dose of 1.40 mSv per year (1,400 µSv/year) from natural background radiation.

Baseline Hazardous Substances

The Environmental Assessment [R2.5-7] submitted as part of the application for a Licence to Prepare Site in 2009 identified areas within the DNNP site that are potentially contaminated with non-radioactive substances, including the soils disposal area, the former DNGS concrete plant, and sandblast grit storage areas. OPG subsequently conducted remediation and decommissioning activities for these areas.

OPG completed a soil characterisation study in 2021, documented in NK054-REP-07330-00053 [R2.5-8] and submitted the results for CNSC staff review. Sampling locations were chosen based on an evaluation of current and historical use of the DNNP land, a comparison of existing soil quality data against current standards and criteria, and the identification of areas of potential concern.

CNSC staff noted the soil characterisation study identified the presence of petroleum hydrocarbons, metals, hydride-forming metals, and other regulated parameters marginally above Ontario MECP Table 3, *Full-Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition*, standards [R2.5-9]. Staff further note these results were consistent with soil characterisation typical of industrial areas.

A.2.2 Design Principles and Requirements

A.2.2.1 Design Quality Assurance

Paragraph 5(g) of the *Class I Nuclear Facilities Regulations* requires that an application for a licence to construct a nuclear facility contain "*the proposed quality assurance program for the design of the nuclear facility*."

Subsection 4.5.3, *Design Principles and Requirements*, of REGDOC-1.1.2 states that the application describe, to the extent practicable, the design principles and requirements covering processes for the overall design of the facility.

Additionally, subsection 4.1.3, *Organization*, of REGDOC-1.1.2 specifies that the applicant is expected to confirm it is in control of the licensed activities, when entering contracts with external organisations.

As outlined in Section 3.1, OPG has selected an Integrated Project Deliver (IPD) model for the DNNP, and the following sections outline roles and responsibilities with respect to design governance for the IPD.

Ontario Power Generation (OPG)

In the application, OPG states that the GE Hitachi (GEH) design quality assurance (QA) program will be used for the design of the BWRX-300. OPG document NK054-PLAN-01210-00008 – *Darlington New Nuclear Project: Program Management Plan* [R2.5-10] describes the OPG governance hierarchy and identifies other Management System documents applicable to the DNNP under the authority of OPG's top-level document N-CHAR-AS-0002 – *Nuclear Management System* [R2.5-11].

For the DNNP, GEH will be the Designer, and AtkinsRéalis (formerly known as SNC Lavalin) will be the Architect and Engineering firm. OPG will perform oversight of the GEH design program while GEH holds the role of the Design Authority ensuring the technical adequacy of the design of the BWRX-300 powerblock. OPG's Chief Nuclear Engineer has the overall accountability for the DNNP, with OPG remaining the Design Authority for areas outside of the BWRX-300 powerblock.

OPG document NK054-PLAN-01210-00035 – *DNNP Engineering Oversight Plan* [R2.1-11] requires OPG to be accountable to provide project management and oversight to ensure that all partners engaged in engineering, procurement, and construction deliver the products and services with acceptable quality and project controls. The document describes OPG's oversight of engineering activities performed by 'non-owner parties' (i.e., GEH and AtkinsRéalis) under the IPD model. Oversight is to be applied using a graded approach, with the degree of oversight based on safety significance and the function of the SSC, the complexity of the design, as well as any available operating experience. CNSC staff reviewed this document and determined it met regulatory requirements regarding OPG's oversight. Should the Commission grant a licence to construct, CNSC staff will verify OPG's oversight of all contractors.

CNSC staff reviewed OPG document NK054-DP-01210-00001 – *Darlington New Nuclear Project Integrated Project Design Plan (IPDP)* [R2.5-12], which is the project-specific top-level document used for OPG's design management of the BWRX-300, and functions as an integration point for all design tasks. CNSC staff noted that the document does not specify OPG's oversight of the Architect and Engineering firm. CNSC staff expect OPG to specify its oversight of the Architect Engineering firm. OPG has committed to providing a revision to this document for CNSC staff review.

OPG's review of its contractor documents, including its review of design documents, is described in procedure N-PROC-MP-0078 – *Specification, Review, Acceptance, and Use of Vendor Technical Documents* [R2.5-13] and in N-STD-MP-0009 – *Contractor/Owner Engineering Interface and Oversight* [R2.5-14]. Both documents are implementing documents of OPG's *Design Management* program, which is itself referenced in N-CHAR-AS-0002. Should the Commission issue OPG a construction licence, CNSC staff will verify OPG complies with these documents.

During the design and construction phases, GEH is responsible for the technical accuracy of the GEH design, as GEH retains design authority during these phases. OPG requires that interfacing requirements, including documents reviewed and accepted by OPG, are defined. OPG document NK054-COI-01210-00002 – *Darlington New Nuclear Project Contractor/Owner Interface Requirements* [R2.5-15] is meant to specify all interfacing documents for all DNNP contractor partners. CNSC staff note that NK054-COI-01210-00002 is not yet finalised. OPG has committed to providing the updated document once finalised. OPG's Owner's Engineering group is responsible for the acceptance of design packages following commissioning, where the Design Authority turns the design over to OPG. This is not expected to occur until the operation phase.

General Electric Hitachi

The role of GEH as the Design Authority is established in GEH document *Design Authority Management Plan* which outlines its roles, responsibilities, and functions for DNNP. CNSC staff reviewed this GEH procedure and concluded that some expectations of subsection 5.1, *Design Authority*, of REGDOC-2.5.2 – *Design of Reactor Facilities* were not met as it relates to organisational interfaces and configuration control during design documentation turnover. OPG has committed to providing a revised document for CNSC staff review.

GEH maintains a QA program, described in GEH document *Quality Assurance Topical Report: Quality Assurance Program Description* [R2.5-16], which has been accepted by the United States Nuclear Regulatory Commission (USNRC). This program document establishes GEH's overall quality assurance philosophy as well as the way quality control will be achieved. This document also describes requirements applicable to Design Control and Software Configuration Management. For DNNP, GEH uses this top-level document in concert with DNNP specific project plans.

To ensure compliance with CNSC requirements, GEH performed a gap assessment of its documentation against the requirements of CSA N286 – *Management System Requirements for Nuclear Facilities (2012)*, CSA N286.7 – *Quality Assurance of Analytical, Scientific, and Design Computer Programs* [R2.4-36] standards, as well as REGDOC-2.5.2 – *Design of Reactor Facilities (version 1)*. For CNSC requirements not met by the USNRC approved plan, GEH will develop DNNP project-specific Quality Plans.

GEH procedure CP-03-100 – *Design Control Procedure* is the overarching procedure that governs the design process and safety analysis, including the pressure boundary programs. Additionally, GEH procedure CP-23-400 – *Engineering Software*, describes software engineering processes using a graded approach to quality requirements based on "Functional Safety Classifications," specified in GEH business procedure BP-23-01 – *Digital Computer Software Classifications and Quality Requirements.* CNSC staff note that GEH's application of a graded approach differs from the N286 definition and may not encompass all SSCs and software.

CNSC staff review of GEH's documentation determined that the design process is documented, and any deficiencies noted can be resolved. Should the Commission issue a licence to construct, CNSC staff will conduct compliance verification activities to ensure the GEH's QA program meets regulatory requirements.

AtkinsRéalis

AtkinsRéalis (formerly SNC Lavalin) is the other major contract partner with responsibility for the design of the BWRX-300 reactor, with contract services procured from its CANDU Energy subsidiary company.

AtkinsRéalis, as the Architect-Engineer, will be carrying out engineering design activities for the detailed design of the BWRX-300 powerblock, as well as for areas outside of the powerblock during all project phases. AtkinsRéalis' interface with powerblock design activities will be important for the conduct of commissioning tests and eventual turnover of the reactor to OPG for operations. The AtkinsRéalis management system was developed to meet the requirements of CSA N286.

CANDU Energy document CE-912020-QAM-002 – *CANDU Energy Quality Assurance Manual* outlines the requirements for design engineering, including design changes for the portion of design activities conducted by the Architect Engineering firm.

CNSC staff will continue to review AtkinsRéalis' documentation, including those describing interface with GEH and OPG to ensure CNSC regulatory requirements have been met. Should the Commission issue a licence to construct, these documents would be provided at the appropriate stage in the construction schedule. CNSC staff will conduct compliance verification activities to ensure the AtkinsRéalis QA program meets regulatory requirements.

Conclusions

OPG has documented its oversight of design activities in multiple plans that must be implemented by all contract partners involved in design activities. The design is independently completed by GEH, with OPG Engineering staff embedded in various project teams and conducting oversight activities.

CNSC staff reviewed the application and supporting information from OPG, GEH and AtkinsRéalis. CNSC staff provided comments to OPG on these documents and OPG has either revised these documents, directed its contractors to revise the documentation or committed to providing revisions to the documentation.

CNSC staff will continue to perform compliance verification activities regarding the control and oversight of the design throughout the licence period and will further assess the interfaces between OPG's and their contractor partners' Design programs as necessary.

A.2.2.2 Identification of Facility States and Operational Configurations

Subsection 4.5.3 of REGDOC-1.1.2 requires that an application for a licence to construct identify all facility states and operational configurations in accordance with REGDOC-2.4.1 – *Deterministic Safety Analysis* [R2.4-34].

Subsection 7.3, *Plant States*, of REGDOC-2.5.2 – *Design of Reactor Facilities* further describes that all identified plant states shall grouped into one or more of the following categories:

- Normal Operation: where operations are within a specified limit or condition, and including start-up, normal power operation, shut down, maintenance, testing, and refuelling conditions.
- Anticipated Operational Occurrences (AOO): where an operation is a deviation from a normal operational state, expected to occur at a specified frequency during the operational life of the facility. The design of the reactor is such that an AOO results in neither any significant damage to items important to safety, nor lead to accident conditions.
- Design-Basis Accidents (DBA): an accident condition for which a reactor is designed in accordance with design criteria, and for which any damage to fuel and any release of radioactive material is kept within regulatory limits.
- Design Extension Conditions (DEC): a set of DBAs considered in the design process in accordance with best-estimate methodologies to maintain any releases of radioactive materials within acceptable limits.

Design requirements of structures, systems and components (SSC) are developed to ensure that the plant is capable of meeting applicable requirements for each defined plant state. CNSC staff review of OPG's application shows that the plant states are identified through safety analyses and described in Chapters 15 and 16 of the PSAR [R2.4-1].

Chapter 16 of the PSAR describes the methodology for identifying and describing Operational Limits and Conditions (OLC), based on REGDOC-2.5.2 expectations, and derived from the analyses and evaluations summarised in Chapter 15 of the PSAR. CNSC staff reviewed Chapter 16 and identified a need

for OPG to provide additional information on the OLCs, including documenting the basis for which the OLCs are derived.

Table A-6 below identifies the normal operating modes of the BWRX-300 reactor, to align with the "normal operation" component of subsection 7.3 of REGDOC-2.5.2.

Table A-6: Identification of BWRX-300 Plant Operating States (Normal Operation)

Plant State	Description
Power Operation	Normal operation of the facility. Reactor water level and pressure are controlled through normal functions, and power manoeuvring is achieved through movement of Control Rods using fine-motor Control Rod Drive Mechanisms.
Startup	Allows the reactor to start the heat-up and pressurisation process by withdrawing Control Rods in a defined sequence. Control Rod Blocks prevent movement of more than 2 simultaneous rods.
Hot Shutdown	Reactor state where a reactor trip signal has been sent to the Control Rods and the average coolant temperature is > 215 ^{o}C with all Reactor Pressure Vessel (RPV) head closure studs fully tensioned.
Stable Shutdown	Reactor state where the RPV closure studs remain fully tensioned, but with the average coolant temperature below 215 ^{o}C and above 93 ^{o}C. Shutdown Cooling systems can be in-service in this mode. This mode is entered into prior to achieving Cold Shutdown.
Cold Shutdown	Reactor state where the average coolant temperature is less than 93 ^{o}C, and decay heat removal is achieved through Shutdown Cooling systems. The Isolation Condenser System is not functional as a result of the low coolant temperature.
Refuelling	Reactor state where it is subcritical and one or more RPV closure head studs are less than fully tensioned. The RPV is unable to pressurise as a result. Decay heat can be removed by the volume of water in the RPV and Fuel Pool.

Table A-7 below identifies the postulated AOOs for which the BWRX-300 reactor is designed, to meet the AOO expectations of subsection 7.3 of REGDOC-2.5.2. The predicted effect of the postulated AOO on the BWRX-300 Nuclear Boiler System is also described.

Table A-7: Identification of BWRX-300 Plant Operating States (Anticipated Operational Occurrences)

Description of Plant State	Effect on Nuclear Boiler System
Loss of Feedwater Heating	Decrease in Core Coolant temperature
Generator Load Rejection (Turbine trip)	Increase in Reactor Pressure
Closure of One Main Steam Reactor Isolation Valve (RIV)	Increase in Reactor Pressure
Loss of Condenser Vacuum	Increase in Reactor Pressure
Loss of Preferred Power	Increase in Reactor Pressure
Feedwater Pump Trip (Single pump)	Decrease in Core Coolant Inventory
Inadvertant Isolation Condenser Initiation (Single train)	Increase in Core Coolant Inventory

Table A-8 below identifies the postulated DBAs and DECs for which the BWRX-300 reactor is designed. The predicted effect of the DBA or DEC on the Nuclear Boiler System is also described.

Table A-8: Identification of BWRX-300 Plant Operating States (Design Basis Accidents and Design Extension Conditions)

Description of Plant State	Type of Plant State	Effect on Nuclear Boiler System
Loss of All Feedwater Heating	DBA	Decrease in Core Coolant Temperature
Generator Load Rejection (Turbine trip)	DBA	Increase in Reactor Pressure
Loss of Preferred Power	DBA	Increase in Reactor Pressure
Reactor Pressure Vessel Control Downscale	DBA	Increase in Reactor Pressure
Closure of All Main Steam RIVs and Feedwater Isolation Valves	DBA	Increase in Reactor Pressure
Fuel Loading Error	DBA	Reactivity and Power Distribution Anomaly
Feedwater Flow Increase (All pumps)	DBA	Increase in Core Coolant Inventory

Description of Plant State	Type of Plant State	Effect on Nuclear Boiler System
Inadvertent Isolation Condenser Initiation (All trains)	DBA	Increase in Core Coolant Inventory
Loss of Feedwater Flow	DBA	Decrease in Core Coolant Inventory
RPV Pressure Control Open	DBA	Decrease in Core Coolant Inventory
Main Steam Pipe Break (Inside Containment)	DBA	Loss of Coolant Accident
Feedwater Pipe Break (Inside Containment)	DBA	Loss of Coolant Accident
Steam and Liquid Pipe Breaks (Small, Inside Containment)	DBA	Loss of Coolant Accident
Control Rod Drop	DEC (No Core Damage)	N/A
Closure of Main Steam RIV (Single)	DEC (No Core Damage)	Increase in Core Coolant Pressure
Generator Load Rejection (Turbine trip, Complex)	DEC (No Core Damage)	Increase in Core Coolant Pressure
Loss of Condenser Vacuum (with Hydraulic Scram)	DEC (No Core Damage)	Increase in Core Coolant Pressure
Loss of Preferred Power (with Hydraulic Scram)	DEC (No Core Damage)	Increase in Core Coolant Pressure
All Control Rod Withdrawal (at-power)	DEC (No Core Damage)	Reactivity and Power Distribution Anomaly
Inadvertent Control Rod Withdrawal (Single, at-power)	DEC (No Core Damage)	Reactivity and Power Distribution Anomaly

A.2.2.3 Radiation Protection in Design

Subsection 4.5.3, *Design Principles and Requirements: Radiation Protection*, of REGDOC-1.1.2 outlines CNSC staff's expectations that an application for a

licence to construct include a description of the approach demonstrating that the facility design meets the requirements of the *Radiation Protection Regulations* as well as the radiation protection objectives and dose acceptance criteria of REGDOC-2.5.2 – *Design of Reactor Facilities*. The application should demonstrate that radiation doses within the reactor facility, as well as any release of radioactive materials, are kept below regulatory limits and are as low as reasonably achievable (ALARA) throughout all operating states and over the lifecycle of the facility.

Subsection 4.1.1 of REGDOC-2.5.2 describes the overall radiation protection objective and expects that, for on-site personnel, "*during normal operations, or during Anticipated Operational Occurrences (AOO), radiation exposures within the NPP or due to any planned release of radioactive material from the NPP are kept below prescribed limits, and are as low as reasonably achievable (ALARA)*."

REGDOC-1.1.2 outlines expectations that an applicant ensures that provisions for the mitigation of the radiological consequences of any accidents are considered in the design. This is achieved through ensuring that potential and actual sources are kept under strict controls. Applicants are expected to provide system-specific requirements for radiation protection and assessments of individual and occupational doses for Nuclear Energy Workers (NEW).

OPG has provided an occupational dose estimate for collective effective dose, based on available BWR design information and operating experience. The occupational collective dose estimate provides a conservative estimate of 0.49 person-Sieverts (p-Sv) per year for a single unit under normal operating conditions. This is significantly lower than the average collective occupational doses reported at operating CANDU and BWR reactors. Through application of OPG's existing ALARA criteria, it is expected that this estimate will be further revised as opportunities to further optimise radiological exposures are identified.

Collective dose is a tool that can be used as a control for occupational exposures but cannot be compared to the regulatory dose limits from the *Radiation Protection Regulations* or used to assess predicted health effects. Due to the early stage of the BWRX-300 design, OPG has not yet submitted an occupational dose assessment for individual NEWs. An occupational dose assessment for individual NEWs is used to ensure the dose acceptance criteria from subsection 6.4 of REGDOC-2.5.2 and the *Radiation Protection Regulations* are met. OPG has committed to providing an occupational dose assessment for individual NEWs and this is included in Appendix D.2.

OPG has developed criteria, documented in NK054-MAN-01210-00002 – *BWRX-300 DNNP ALARA Design Criteria* [R2.5-17], to ensure that radiation protection principles, and the concept of ALARA, are considered in the design of the BWRX-300 throughout the facility's lifecycle and in all operational states. This is to be accomplished through minimising the time spent by NEWs in radiation areas, by strategically locating equipment to allow it to be serviced

quickly and efficiently, by allowing for the removal of equipment to low-dose areas for servicing, and by allowing for remote operation of equipment in elevated dose rate locations. Additionally, radiation levels in occupied areas will be controlled through use of permanent or temporary shielding, by ensuring radiation sources are physically separated from occupied areas, and by implementing measures to control the spread of contamination. Measures to mitigate doses to personnel on-site during accident conditions are also considered.

OPG has developed designated radiological zoning criteria for the facility, based on conservative source term estimates and an estimation of anticipated dose rates that consider normal operations, refuelling, and accident conditions. The zoning criteria also considers the control of external exposures below regulatory dose limits, and will define the appropriate access controls, to provide overall control of dose rates through implementation of shielding and access restrictions.

OPG has committed that the overall shielding design for protection of plant personnel will ensure that systems containing radioactivity are shielded in accordance with the zoning criteria and will take into consideration the buildup of nuclear substances over the lifetime of the facility. Permanent shielding will be preferred over temporary shielding, where the design of the facility allows, and temporary shielding will be available should its use be required. Due to the early stage of BWRX-300 design, the shielding analysis has not yet been completed and OPG has committed to providing information supporting the shielding design prior to the construction of internal Reactor Building structures as outlined in Appendix D.2. CNSC staff will review this submission to ensure OPG has designed permanent shielding to protect workers.

OPG has developed requirements for the ventilation of areas containing radioactivity, to ensure that any airborne contamination is removed and contained, and that the overall ventilation airflow pattern is from areas of low to high concentrations of airborne radioactivity. Shielded high-efficiency particulate-in-air (HEPA) filters will be used to prevent and minimise airborne releases within the facility. Control of the spread of contamination will be implemented using containment in areas where spills may occur, using leak detection systems, and minimising the amount of buried or tightly enclosed equipment. Design provisions are included for decontamination facilities, laundry facilities, and personnel monitoring areas. OPG has committed to provide additional information relating to airborne concentrations and contamination levels within the facility prior to the construction of internal Reactor Building structures as outlined in Appendix D.2. CNSC staff will review this submission to verify that OPG has ensured the design takes into account measures to protect workers.

A Process Radiation Monitoring and Environmental Monitoring System (PREMS) will be provided for the monitoring area dose rates and airborne radioactivity within the facility during all operational states, including post-accident conditions. This system includes various subsystems for the monitoring of containment, process sampling, ventilation airborne contamination monitoring

(including exhaust stack, the off-gas system, and building exhaust), as well as ambient area radiation levels. Monitoring will be performed in strategic locations throughout the facility and in ventilation systems, with required alarming capability implemented to notify personnel when conditions change and require protective measures. The selection of appropriate equipment, locations, monitoring ranges, and alarming setpoints of monitoring equipment is expected to be finalised as the design progresses, and OPG has committed to providing this information prior to the construction of internal Reactor Building structures as described in Appendix D.2.

The plant design will minimise the generation of radioactive contamination and wastes during operation and decommissioning by reducing the volume of components and structures that become contaminated during the lifecycle of the facility. Additionally, liquid and solid waste management systems will be located in shielded areas that are access controlled.

Clean filtered air will be provided to ensure the Main Control Room (MCR) and the Secondary Control Room (SCR) are accessible and habitable, and that radiological exposures to NEWs remain below regulatory dose limits, under normal operations, AOOs, design basis accidents, station blackouts, and Design Extension Conditions without core melt. During normal operations and AOOs, shielding will be implemented such that the dose rates in the MCR will be in accordance with design criteria and limited to 2 µSv per hour. The SCR will have shielding implemented such that dose rates are limited to 6 µSv/hr. In addition, shielded access routes will be provided to allow for travel between the MCR and SCR.

CNSC staff have reviewed OPG's documentation in support of ensuring that radiation protection and ALARA principles are considered in the design of the BWRX-300 and conclude that OPG has sufficient provisions to ensure ALARA principles are incorporated in the design of the facility. CNSC staff will continue to verify OPG's design provisions for radiation protection as outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* to ensure that the design meets regulatory requirements.

A.2.2.4 Safety Objectives, Goals, and Functions

Subsection 4.5.3, *Design Principles and Requirements*, of REGDOC-1.1.2 states that an application should describe how the CNSC safety objectives and safety goals are met, in accordance with the safety objectives and goals established in REGDOC-2.5.2. The application should also describe how the fundamental safety functions (FSF) have been incorporated into the design of the reactor.

Section 4, *Safety Objectives and Concepts*, of REGDOC-2.5.2 establish the general, radiation protection, technical, and environmental protection safety objectives and goals for the design and operation of reactor facilities. Subsection 6.2 of REGDOC-2.5.2 specifies that the following safety functions must "*be*

available during all operational states of the facility, including Design Basis Accidents and Design Extension Conditions:

- *Control of reactivity*
- *Removal of heat from the fuel*
- *Confinement of radioactive material*
- *Shielding against radiation*
- *Control of operational discharges and hazardous substances, as well as limitation of accidental releases; and*
- *Monitoring of safety-critical parameters to guide operator actions*."

Subsection 3.1.1 of OPG's PSAR describes the general nuclear safety objective and three complementary safety objectives to inform the design and safety analysis of the BWRX-300, in accordance with REGDOC-2.5.2. Detailed information on how those safety objectives are met, is provided throughout the respective Chapters of the PSAR.

The FSFs prevent or mitigate radiological releases by ensuring that the physical barriers to fission product releases—i.e., the fuel matrix, fuel cladding, the Reactor Coolant Pressure Boundary (RCPB), and containment—remain effective.

Subsection 3.1.2.2 of the PSAR also establishes the dose acceptance criteria based on the requirements of REGDOC-2.5.2—that is, 0.5 milliSieverts (mSv) for any AOO, and 20 mSv for any Design-Basis Accident (DBA). Chapter 15 of OPG's PSAR describes the results of the safety analysis to demonstrate that dose acceptance criteria are met for AOOs and DBAs. CNSC staff's review of these analyses is documented in subsections A.1.2 – *Probabilistic Safety Analysis* and A.1.3 – *Deterministic Safety Analysis*.

CNSC staff have reviewed the described BWRX-300 safety objectives and goals and determined they have been established in accordance with CNSC regulatory expectations. OPG will be required to submit detailed design information for CNSC staff review, as the design progresses, to demonstrate that the safety objectives and goals remain in accordance with the expectations of REGDOC-2.5.2.

A.2.2.5 Defence in Depth

As described in subsection 4.5.3, *Design Principles and Requirements,* of REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility,* defence in depth is an approach in the design of nuclear facilities that ensures that multiple and, where practicable, independent barriers for defence are provided for protection against AOOs and accidents. For nuclear reactors, implementation of the defence in depth principle protects against the exposure of workers, members of the public, or release of radioactivity to the environment exceeding safe levels.

The implementation of defence in depth in the BWRX-300 design forms the basis for the safety strategy to ensure an adequate level of safety is achieved in the design. Defence in depth is applied to provide an overlapping series of levels of defence for the prevention of accidents, and to ensure appropriate protection of workers and the public if accident prevention fails. The BWRX-300 design considers two types of defensive layers:

- Physical barriers put in place to prevent the release of radioactivity. These barriers include the fuel matrix itself, the fuel cladding, the Reactor Coolant Pressure Boundary (RCPB), and the containment structure. The integrity of one or more of these physical barriers must be maintained to prevent unacceptable releases.

- A combination of active, passive, and inherent safety features used to minimise the challenges to physical barriers, to maintain the integrity of those barriers and, in the event a barrier has been breached, to ensure the integrity of the remaining barriers.

The BWRX-300 applies the defence in depth concept through the fundamental safety functions outlined in subsection A.2.2.4 – *Safety Objectives, Goals, and Functions*, and described in subsection 3.4.2.1.1 of the PSAR [R2.4-1]. These fundamental safety functions define the interface between the defence lines and the physical barriers. If the fundamental safety functions are performed successfully, the corresponding physical barriers remain effective.

OPG provided NK054-REP-01210-00183 – *BWRX-300 Darlington New Nuclear Project (DNNP) Safety Strategy* [R2.5-18] that provides a description of how the BWRX-300 design applies the Defence in Depth concept. The design proposes five Defence Lines (DL), or levels, identified as DL1 through DL5, consistent with REGDOC-2.5.2 – *Design of Reactor Facilities (version 1)*:

- DL1 includes features and functions that are aimed at the prevention of deviations from normal operation and the prevention of failures of SSCs important to safety. It is also intended to minimise the potential for failures in subsequent defence lines through assuring high quality and conservatism in the design, construction, and operation of the plant. This defence line does not include normal plant functions.
- DL2 includes features and functions that are aimed at detection and control of deviations from normal operation.
- DL3 includes functions that are intended to act to mitigate postulated initiating events (PIE) leading to accident conditions. Systems and equipment included in DL3 are designed for high reliability through elimination of support systems.
- DL4 features are further subdivided into DL4a and DL4b functions. DL4a functions are those that are intended to mitigate Design Extension Conditions (DEC) that do not cause core damage and provide means to

maintain the plant in a safe state in the event of a DL3 SSC being unable to perform its function due to failure. DL4b functions are those intended to mitigate DECs that cause core damage and aim to maintain containment functions for extreme events, multiple events, or multiple failures that challenge or defeat DL2, DL3, and DL4a functions. DL4b also provides functions to mitigate the effects of a damaged core and limit radioactive releases to acceptable levels.

- DL5 includes features and functions that are intended to mitigate or reduce the consequences of radioactive releases through implementation of emergency preparedness measures.

Defence Line 1

Defence Line 1 measures may support the basis for assumptions made in safety analyses. For example, the use of a high-quality design process and stringent equipment qualification practices for systems, structures, and components (SSC) important to safety supports the assumption that only a single failure is considered in the conservative Deterministic Safety Analysis (DSA) discussed in Chapter 15 of the PSAR [R2.4-1].

Some examples of Defence Line 1 measures can include:

- The clear definition of normal and abnormal operating conditions;
- The maintenance and implementation of a quality assurance program consistent with nuclear regulations and industry standards;
- Application of appropriate industry standards to the design of the SSC;
- Application and assurance of adequate design margins;
- The maintenance and implementation of robust design processes, including independent verification of designs where applicable; and
- Comprehensive testing programs.

Defence Line 2

The purpose of Defence Line 2 is primarily to detect and control potential deviations from normal operational states, to prevent anticipated operational occurrences (AOO) from escalating to accident conditions. Those functions that would normally operate to maintain key reactor parameters (e.g., reactor pressure, coolant level, and reactivity) within normal operating ranges are part of DL2.

Some examples of Defence Line 2 functions can include:

- Anticipatory reactor or equipment trips;
- Maintenance of target reactor power levels;
- Maintenance of target coolant levels;
- Maintenance of target reactor pressures; and

- Control Rod Block.

Defence Line 3

The purpose of Defence Line 3 is to ensure SSCs important to safety are able to return the plant to a controlled state, and ultimately to a safe shutdown state and minimise the consequences of design basis accidents (DBA). There should also be provisions to maintain at least one barrier to prevent release of radioactive materials.

For the BWRX-300, equipment serving a DL3 function are subject to functional and design requirements derived from the conservative DSA described in Chapter 15 of the PSAR. Some examples of Defence Line 3 functions can include:

- The reactor trip ("reactor scram") function;
- Initiation of the Isolation Condenser System (ICS);
- Isolation of the Main Steam Line;
- Isolation of the Containment structure; and
- Isolation of the Reactor Pressure Vessel (RPV).

Defence Line 4

The purpose of Defence Line 4 is to mitigate the effects of design extension conditions (DEC). For the BWRX-300 design, Defence Line 4 is comprised of two subsets of functions designated as either DL4a or DL4b functions. DL4a functions are those that mitigate DECs occurring without core damage, whereas DECs that progress to core damage events are mitigated by DL4b functions.

Defence Line 4a

Defence Line 4a functions are those that place and maintain the plant in a safe state in scenarios involving:

- DBA sequences combined with multiple failures preventing a DL3 SSC from performing its intended function (i.e., a Common Cause Failure, or a failure of two or more SSCs due to a single initiating specific event or cause); or,
- DEC PIEs considered as credible events that may involve multiple failures, causing the loss of a fundamental safety function to be fulfilled as part of normal operation.

Some examples of DL4a functions include:

- Isolation of the Reactor Pressure Vessel, containment, or other systems independent of SSCs carrying out a DL3 function.

- Initiation of the Isolation Condenser System independent of DL3 functions.
- A fine-motor control rod drive motor fast run-in.
- Reactor trips initiated by the Diverse Protection System.

Defence Line 4b

Defence Line 4b functions are those that place and maintain the plant in a safe state involving:

- Functions provided in scenarios leading to core damage, intended to limit the radiological releases in case of core damage and are aimed at maintaining the containment functions for extreme events, multiple events, or multiple failures that defeat DL2, DL3, and DL4a functions.
- Functions provided to mitigate the effects from a damaged core, and to preserve the containment of radioactive material fundamental safety function, whilst limiting radioactive releases to acceptable levels.

Some examples of DL4b functions include:

- DL4b functions carried out by complementary design features, such as diverse and flexible equipment and portable components (e.g., portable uninterruptible power supplies and portable pumps);
- Containment venting and overpressure protection; and
- Boron injection

CNSC staff note that a list of complementary design features is provided in Chapter 15 of the PSAR. CNSC staff's review of the complementary design features found that the PSAR did not provide sufficient details on features that could be required to provide make-up cooling water inventory to the RPV in unforeseen events. OPG has committed to provide additional design details for these complementary design features.

Defence Line 5

The purpose of Defence Line 5 is to act as the final level of defence to mitigate the consequences of radiological releases that could potentially result from accident scenarios.

This Defence Line also includes emergency preparedness measures to cope with potential unacceptable releases in the event the first four Defence Lines are ineffective. These are largely off-site measures taken to protect the public in a scenario involving the substantial release of radiation.

Some examples of DL5 measures include:

- Severe accident management procedures and guidelines;

- Emergency response procedures and equipment, and their peripheral systems such as meteorological monitoring;
- On- and off-site emergency response capabilities and facilities.

CNSC staff concluded that the BWRX-300 design includes independence in the implementation of the defence in depth concept. Where sharing of equipment between defence lines was implemented (e.g., limited sensor sharing between DL2 and DL4a), CNSC staff's review determined that it meets the requirements to maintain independence of defence levels to the extent practicable, as required by REGDOC-2.5.2. Subsection A.2.5.7 – *Instrumentation and Control* provides an overview of CNSC staff's review of the limited sharing of sensors between defence lines. CNSC staff will conduct a more detailed assessment as the design progresses, should the Commission issue a licence to construct.

CNSC staff concluded that OPG has implemented the principle of multiple overlapping physical barriers to ensure adequate defence in depth. Specifically, with the BWRX-300 design, four (4) physical barriers are provided: the fuel matrix, the fuel cladding, the Reactor Coolant Pressure Boundary (RCPB), and the Containment System.

CNSC staff's review determined that OPG's documentation lacked detailed design information DL4 or DL5 BDBA features including: the core catcher, Control Rod Drive (CRD) coolant make-up, alternate coolant make-up, passive autocatalytic recombiners, the ultimate pressure relief device, and vent line filters. OPG is required to provide this information prior to the installation of the Reactor Building foundation, as outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

In conclusion, CNSC staff determined that while the implementation of defence in depth with the BWRX-300 design is adequate for this stage of the design, additional information is required by OPG to ensure the defence in depth concept is implemented in accordance with REGDOC-2.5.2 as the design progresses.

A.2.2.6 Safety Classification of Structures, Systems, and Components

Subsection 4.5.3, *Design Principles and Requirements: Safety Classification of Structures, Systems, and Components*, of REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility (version 2)* outlines expectations that an application for a licence to construct should describe the approach chosen in the design for the classification of structures, systems, and components (SSCs). This safety classification approach should also address requirements in REGDOC-2.5.2 and include criteria for deciding the appropriate design requirements for each class of SSCs.

Subsection 7.1, *Safety Classification of Structures, Systems, and Components*, of REGDOC-2.5.2 – *Design of Reactor Facilities* provides further expectations for the classification of SSCs. The design shall classify SSCs using a defined

classification methodology and shall be designed, constructed, and maintained such that their quality and reliability is commensurate with the classification. Further, all SSCs shall be identified as either important or not important to safety, dependent on: the safety function(s) to be performed, the consequence(s) of failure of that SSC, the probability that the SSC will be called upon to perform this function, and the time following a PIE which the SSC will be required and the expected duration of that operation.

Codes, standards, and industry guidelines collectively form the basis for the design, construction, installation, testing, inspection, maintenance, and quality assurance of SSCs commensurate with their safety classification. CNSC staff reviewed OPG's application and its supporting documentation to describe how the SSCs in the BWRX-300 design are categorised by safety class [R2.5-18]-[R2.5-20]. The following subsections describe CNSC staff's review of these supporting documents.

CNSC staff have reviewed OPG's proposed safety classification scheme for the BWRX-300 and determined that it meets the intent of safety classification expectations identified in subsections 7.1, 7.7, and 7.13.1 of REGDOC-2.5.2. CNSC staff's review also identified items of concern, which OPG is required to address to ensure all regulatory expectations of REGDOC-2.5.2 are met.

A.2.2.6.1 Safety Classification

OPG's approach to the safety classification of SSCs follows the implementation of the defence in depth principles. A safety classification is assigned to an SSC that performs a safety category function. This distinction is outlined in IAEA safety guide SSG-30 – *Safety Classification of Structures, Systems, and Components in Nuclear Power Plants*, incorporated as guidance in REGDOC-2.5.2. In its application and supporting documentation, OPG establishes a straightforward one-to-one correlation between defence lines (refer to subsection A.2.2.6.1 – *Safety Classification* above) and functional safety categories, as follows:

Table A-9: Definitions of Proposed BWRX-300 Safety Classifications

Safety Classification	Description
Safety Class 1	Safety Class (SC) 1 is assigned to SSCs that perform Safety Category 1 functions. Defence Line (DL) 3 functions are significant from a safety perspective and are consequently classified as Safety Category 1. As described in subsection A.2.2.5, DL3 functions assure the integrity of the barriers to radiological releases, place and maintain the plant in a safe state during a DBA and provide independence and diversity for all DL2 and DL4a functions in the event of a single failure.
Safety Class 2	Safety Class 2 is assigned to SSCs that perform a Safety Category 2 function. DL 4a functions are less important to safety than DL3 functions, but more important to safety than DL2 functions. DL4a functions are classified as Safety Category 2.

Safety Classification	Description
	Both DL2 and DL4a provide redundant means to address PIEs (i.e., they are generally independent of DL3 functions), and are therefore important from a safety perspective. The importance of DL2 and DL4a is less than the importance of DL3 functions. DL4a functions are independent and diverse backups to DL3 functions in the event a DL3 function fails. Consequently, DL4a functions have a higher consequence of failure than DL2 functions.
Safety Class 3	Safety Class 3 is assigned to SSCs that perform a Safety Category 3 function. Both DL2 and DL4b functions are less important to safety than DL4a functions. Consequently, both DL2 and DL4b functions are classified as Safety Category 3. DL4b functions are used in response to severe accidents, which are unlikely as this would be the result of a failure of both DL3 and DL2 or DL4a functions—an already-unlikely scenario. Consequently, DL4b functions are—in comparison to other defence in depth functions—the least important defence line function, despite the high consequence in the event of their failure.
Non-Safety Class	This is assigned to SSCs that do not provide a function important to safety. All other SSCs are assigned to this classification.

CNSC staff have raised concerns regarding OPG's proposal for safety classification using the DL approach, and the correlation between safety classification, quality assurance for procurement, and code classification.

At this time, CNSC staff concur on the acceptability of the selection of QA standards for procurement of SC1 SSCs. Procurement of long-lead items involving non-risk significant SC2 and SC3 SSCs under ISO 9001, prior to CNSC determining the acceptability of OPG's Safety Strategy, may result in items that are procured at OPG's risk with these items potentially not being accepted by CNSC staff. In addition, it is not clear which QA and cyber security standards will be used to procure I&C components with various significance classifications levels and Cyber Essential Assets (i.e., digital components that perform or impact on nuclear safety, nuclear Security, Emergency Preparedness, and Safeguards functions). CNSC staff expect a clear and consistent process for selection of QA and cyber security standards for all SSCs. This commitment is described in subsection 2.11.2.4 – *Cyber Security*. CNSC staff will verify that OPG has ensured that all SSCs meet the regulatory expectations prior to their installation.

CNSC staff have determined that OPG has provided sufficient information to support a recommendation that the Commission a licence to construct. OPG has committed to demonstrating the use of consequence of failure as basis for classification in future phases of this project. Should OPG be unable to provide the necessary demonstration and resolve CNSC staff's concern, CNSC staff would then assess whether OPG remains within its licensing basis.

A.2.2.6.2 Pressure Boundary Quality Group

Subsection 7.7, *Pressure-Retaining Structures, Systems and Components*, of REGDOC-2.5.2 requires that all pressure-retaining SSCs are protected against overpressure conditions and are classified, designed, fabricated, erected, inspected, and tested in accordance with established standards. The design should also ensure that the selection of codes and standards is commensurate with the safety class and is adequate to provide confidence that plant failures are minimised.

The BWRX-300 design uses a Quality Group designation, in accordance with guidance in USNRC Regulatory Guide RG-1.26 – *Quality Group Classifications and Standards for Water, Steam, and Radioactive Waste Containing Components of Nuclear Power Plants* [R2.5-21].

OPG uses this RG as a method for establishing appropriate codes and standards commensurate with the importance of the pressure-retaining function of the component. Components are classified as Quality Group, A, B, C, or D, summarised as follows:

- Quality Group A applies to pressure-retaining portions and supports of mechanical items forming part of the Reactor Coolant Pressure Boundary (RCPB), and whose failure could cause a loss of reactor coolant greater than the normal make-up capability.
- Quality Group B applies to pressure-retaining portions and supports of containment and other mechanical items relied upon to accomplish some safety-related functions.
- Quality Group C applies to pressure-retaining portions and supports of items that are assigned to neither Quality Group A nor B, but are relied upon to accomplish safety-related functions.
- Quality Group D applies to pressure-retaining portions and supports of items that are assigned to neither Quality Group A, B, or C, but are subject to one or more significant licensing requirements or commitments.

Compliance with CSA N285.0 – *General Requirements for Pressure-Retaining Systems and Components in CANDU Nuclear Power Plants* [R2.5-22] is required for all pressure-retaining systems and components of CANDU reactors in Canada. OPG has proposed compliance with N285.0 requirements but will request a variance from this standard to apply RG 1.26 code classification rules for the BWRX-300, given that the N285.0 standard contains classification rules that are specific to CANDUs.

In addition to a variance request, OPG will also be required to provide a technical basis document that will be used for code classification to demonstrate an acceptable alternative means of compliance between RG 1.26 and N285.0, as required by REGDOC-2.5.2. OPG is also required to provide a detailed system

classification list for CNSC approval prior to the procurement of SSCs for the BWRX-300.

CNSC staff reviewed OPG's proposal to use RG 1.26 rules as an alternative to CSA N285.0 classification rules and concluded that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct given that the CNSC allows for alternative approaches to meet regulatory expectations. It is imperative that OPG demonstrate the implementation of alternative rules will result in an equivalent or superior level of safety in its subsequent submissions. Should OPG not be able to demonstrate this, OPG will be required to implement the existing rules. OPG is required to provide additional information to address regulatory expectations related to pressure-retaining systems and components.

A.2.2.6.3 Seismic Category

Subsection 7.13.1, *Seismic Design and Classification*, of REGDOC-2.5.2 requires that the design ensure all seismically qualified SSCs important to safety are qualified to a design-basis earthquake (DBE) and are classified accordingly. The design of these SSCs shall also maintain essential attributes and functions—such as pressure boundary integrity, leak-tightness, operability, and physical position—in the event of a DBE.

The Seismic Category is intended to reflect SSC requirements both during and after a seismic event. OPG is required to provide information to demonstrate that an SSC is designed and qualified to meet seismic requirements. OPG's approach to seismic categorisation is based on the implementation of defence lines (refer to subsection A.2.2.5 – *Defence in Depth* above), and are summarised below:

- Seismic Category A/B: DL3 functions are credited with remaining operable during and after a seismic event associated with a DBE. Accordingly, SSCs that perform or support DL3 functions are classified as Seismic Category A for SSCs that are simply required to remain structurally intact.

- Seismic Category RW-IIa: SSCs that are intended for the safe management and storage of radioactive material that, should it be released, would exceed a dose of 5.0 mSv per year outside of the protected area or 50.0 mSv per year inside the protected area are classified as Seismic Category RW-IIa. This is consistent with guidance in USNRC RG 1.183 – *Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors* [R2.5-23]. These SSCs are seismically qualified for one-half of the site-specific DBE.

- Non-Seismic: All other SSCs are classified as non-seismic and are designed based on applicable non-nuclear requirements, such as those provided in the *National Building Code of Canada (2020 edition)* [R2.5-24].

CNSC staff's review of the PSAR [R2.4-1] and its supporting documentation indicates that OPG has categorised pressure-retaining structures and components (PRSC) that are Quality Group A, B, or C (refer to subsection A.2.2.6.2 – *Pressure Boundary Quality Group* above) as Seismic Category A or B, with the exception of three components: flow elements, differential pressure measurements, and components supporting feedwater leak detection.

OPG has not classified these three component types as Seismic Category A or B, stating that their failure would not result in an adverse impact to their safety function. CNSC staff identified that not all SSCs with a safety function have been seismically classified, as outlined in REGDOC-2.5.2. OPG has committed to providing additional information to address this concern.

A.2.2.7 Design for Reliability

Subsection 4.5.3, *Design Principles and Requirements*, of REGDOC-1.1.2 includes CNSC expectations regarding how the applicant should describe the reliability design and analysis for SSCs important to safety. The application for a licence to construct should demonstrate the basis for any reliability targets that meet the design for reliability expectations of REGDOC-2.5.2 and REGDOC-2.6.1 – *Reliability Programs for Nuclear Power Plants* [R2.5-25].

Subsection 7.6, *Design for Reliability*, of REGDOC-2.5.2 outlines expectations that all SSCs important to safety be designed with a sufficient quality and reliability to ensure the SSCs meet design limits. Reliability analyses must also be performed for each of the SSCs important to safety.

REGDOC-2.6.1 outlines expectations that licensees establish a reliability program to ensure that systems important to safety meet their defined design and performance criteria, at an acceptable level of reliability throughout the lifecycle of the facility. In the design stage, an applicant is expected to identify systems important to safety and ensure that the reliability design of these systems is commensurate with their safety significance.

Overview of CNSC Requirements for Reliability and Fitness for Service

The reliability of an SSC is the ability for that SSC to perform, in accordance with its design specifications, its required function under a set of given conditions for a defined period, or upon demand. To minimise the potential risks from operation of a nuclear power plant to a reasonable level, a plant must operate within a defined boundary set of conditions to ensure safety. To maintain this level of reliability, CNSC has established requirements and guidelines concerning the fitness for service of SSCs, which include activities that affect the physical condition and performance of these SSCs to ensure they remain effective over their design lifetime.

REGDOC-2.6.1 describes the essential elements of a reliability program, including descriptions of reliability modelling, assessments, evaluation, and

monitoring. Subsection 7.6 of REGDOC-2.6.1 expects that reliability design for SSCs important to safety meet several elements, including:

- Where possible, the design shall provide for testing to demonstrate that the reliability targets will be met during operation.
- Safety systems and their support systems shall be designed to ensure the probability of failure of a safety system, on demand, from all-causes is lower than 10^{-3}.
- The design for reliability shall take into account mission times for SSCs important to safety.
- The design shall take into account the availability of off-site services upon which the safety of the plant and protection of the public may depend, such as the supply of electricity and provision of external emergency response services.

In addition, subsection 7.6 of REGDOC-2.5.2 also provides guidance for the inclusion of qualitative design considerations, such as common-cause failures, single-failure criterion, fail-safe designs, allowances for equipment outages, and considerations for the sharing of systems.

CNSC staff note that REGDOC-2.6.1 emphasises the importance of reliability programs during a plant's operational phase; however, the approach described in the REGDOC applies to all phases of the lifecycle of a nuclear power plant when systems important to safety are required to be available—i.e., design, construction, commissioning, start-up, operation, and eventual decommissioning.

CNSC Staff Assessment of OPG's Proposed Reliability Design Strategy and Program for the BWRX-300 Reactor

Subsection 13.3.2.3 of the PSAR [R2.4-1] addresses the fitness for service activities that affect the physical condition of SSCs to ensure they remain available to perform their intended function when required. The PSAR states "*[F]itness for service is addressed in established programs that include Reliability, Maintenance, [Ageing Management], Chemistry Control, Periodic Inspections, and In-Service Inspections.*"

Additionally, the PSAR also states that "*Reliability is incorporated during facility design, consistent with the requirements of CNSC REGDOC-2.5.2, and through the Reliability Program that complies with REGDOC-2.6.1.*" The DNNP Reliability Program will therefore be implemented in all phases of the BWRX-300 lifecycle, to ensure that systems function reliability in accordance with design and performance criteria.

Subsection 2.1.5 of OPG document NK054-REP-01210-00184 – *Darlington New Nuclear Project (DNNP) Structure, Systems, and Components Classification*

Report [R2.5-26] identifies the reliability design targets for safety category functions as:

- Safety Category 1 functions: 1E-04 failures per demand
- Safety Category 2 functions: 1E-03 failures per demand
- Safety Category 3 functions: 1E-02 failures per demand

In addition to setting the reliability targets for SSCs important to safety, OPG also describes the approach to ensure overall quantitative reliability design principles are used in the SSC design. Subsection 3.1.7 of the PSAR describes these principles, including the important considerations from REGDOC-2.5.2. The detailed design information on reliability for specific systems are described in Chapters 4 through 10 of the PSAR.

To ensure that overall reliability design principles are incorporated into the detailed design of the SSCs, OPG has provided two documents to guide the plant design:

- NK054-PROG-60009-00001 – *BWRX-300 Darlington New Nuclear Project (DNNP) Design Reliability Assurance Program* (D-RAP) [R2.5-27]
- NK054-PROG-01500-00001 – *BWRX-300 Reliability, Availability, Maintainability, and Inspectability Program* [R2.5-28]

NK054-PROG-60009-00001 provides OPG's approach for identifying SSCs important to safety and ensuring their reliability during the design phases. This specification is applicable to reliability assurance activities that occur before commissioning can occur. This program is the first phase in the implementation of a reliability assurance program for the BWRX-300, with the second phase being the implementation of an operations reliability assurance program.

NK054-PROG-01500-00001 is intended to provide supplementary requirements related to the reliability, availability, maintainability, and inspectability (RAMI) of SSCs. The purpose of the BWRX-300 RAMI program is to document the tasks required to ensure that SSC design, procurement, layout, maintenance, inspection, and testing activities support overall plant and equipment reliability.

As discussed in subsection A.2.2.6.1 – *Safety Classification* above, safety systems are correlated to systems that perform defence line (DL) 3 functions, and whose reliability target is set to 1E-04. The DL4a function is correlated to safety category 2 functions, with a reliability target of 1E-03. Both the DL3 and DL4a functions are designed with reliability targets of 1E-03, or lower, as expected by REGDOC-2.5.2. OPG has set the failure-on-demand targets for systems that perform defence line functions, summarised in Table A-10 below:

Table A-10: Summary of Reliability Targets per Defence Line and Safety Category

Defence Line	Safety Category of Function	SSC Safety Class	Reliability Target
DL2	3	3	1E-02
DL3	1	1	1E-04
DL4a	2	2	1E-03
DL4b	3	3	1E-02

Complementary design features include those SSCs assigned to DL4b functions, with a reliability target of 1E-02. CNSC staff determined that this is consistent with the reliability design principles of REGDOC-2.5.2 and international guidance. Safety class 3 systems include those assigned to perform DL2 functions and are not designated as safety systems. CNSC staff determined that the reliability target for these systems is acceptable but will require further detailed substantiating information from subsequent deterministic and probabilistic safety assessments.

Reliability Design Program

CNSC staff reviewed OPG's application and its supporting documentation and determined that the application includes the Design for Reliability elements outlined in REGDOC-1.1.2 and REGDOC-2.6.1. CNSC staff will continue to review detailed SSC design information to confirm that reliability design objectives are met, as the design progresses.

CNSC staff note that the D-RAP program provides the processes and programmatic controls for identifying systems important to safety. The D-RAP provides this identification based on preliminary design information and PSA results. OPG uses a blended approach to identify and prioritise these SSCs, combining the various analytical PSA results with OPEX, deterministic evaluations, and an expert panel process, to develop a comprehensive list of these SSCs. This list is not provided in the D-RAP document. OPG will be required to provide the finalised list of D-RAP SSCs as the design progresses.

The risk-significant measures for SSCs are also not documented in the D-RAP program. Rather, OPG proposes alternative risk-important measures, summarised below:

- Conditional Core Damage Frequency: greater than 1E-05 per year.
- Conditional Large Release Frequency: greater than 1E-06 per year.
- Fussell-Vesely value of greater than 0.2, for either the Core Damage or Large Release frequencies.

In comparison, the currently established risk-significant measures are described in subsection 3.1.4, *General Guidance for Obtaining the List of Systems Important to Safety*, of REGDOC-2.6.1, and are:

- A Risk Achievement Worth of > 2
- A Fussell-Vesely value of > 0.05 for systems, or a value > 0.005 for a single component.

OPG states that the alternative risk-significant measures were proposed because of the very low predicted CDF and LRF values for the BWRX-300.

CNSC staff determined that the new proposed risk-significant measures are a substantial deviation from current international practice. OPG will be required to provide additional supporting information to substantiate the selection of this new risk importance classification scheme. CNSC staff will review the submissions to determine whether OPG's proposed approach meets regulatory expectations.

Reliability Analysis of Passive Systems

OPG states that reliability analyses for systems important to safety will be conducted as a component of probabilistic safety analyses with the use of generic data derived from USNRC NUREG-6928 – *Industry-Average Performance for Components and Initiating Events at US Commercial Nuclear Power Plants*. CNSC staff have determined that this is an acceptable approach for the purposes of plant design.

As the BWRX-300 relies on the use of passive safety systems to ensure the safety of the reactor, traditional reliability analysis methodologies are not suited to assess the reliability of passive safety functions. In the review of the application, CNSC staff requested OPG provide the reliability analysis methodology and results for passive safety features.

OPG stated that their proposed passive reliability analysis methodology is based primarily on the "Reliability Methods for Passive Safety Functions (RMPS)" approach, illustrated in IAEA Technical Document 1752 – *Progress in Methodologies for the Assessment of Passive Safety System Reliability in Advanced Reactors*. CNSC staff have determined that this approach is acceptable for the design of plant systems and will continue to evaluate OPG's passive safety system reliability analyses as the design progresses.

A.2.2.8 Human Factors Engineering

Subsection 4.5.3 of REGDOC-1.1.2 outlines regulatory expectations for how the facility design accounts for human factors, including a description of the systematic process that has been followed to incorporate consideration of human factors into the specification, definition and analysis of requirements, design activities, and verification and validation activities. The application should also describe the interfaces of human factors in design with specific SSCs.

Subsection 7.21, *General Design Requirements: Human Factors*, of REGDOC-2.5.2 provides additional expectations for human factors considered in the design of nuclear power reactors.

CNSC staff reviewed OPG's application and supporting documentation to determine if OPG has met the applicable regulatory requirements associated with Human Factors Engineering (HFE). CNSC staff reviewed Chapter 18: *Human Factors Engineering* [R2.5-30] of the PSAR and its supporting documents, and are satisfied that the HFE program will identify and assess risks and consequences that arise from human interactions with the plant, and to reduce those risks as far as is reasonably achievable. The HFE program identifies and addresses these risks and consequences throughout the lifecycle of the plant.

A.2.2.9 Design Changes and OPEX

Subsection 5.3, *Design Control Measures*, of REGDOC-2.5.2 – *Design of Reactor Facilities* outlines expectations that sufficient design controls be established to ensure the initial design, and any subsequent change or safety improvement, is carried out in accordance with the established processes and procedures, appropriate codes and standards, and to ensure these changes address applicable requirements and design bases.

Design change control is critical for new build projects. As the design progresses from a conceptual design to detailed design and the creation of construction work packages, design changes will occur. Ensuring design changes are managed in accordance with established design change control and configuration management processes are key to ensuring the as built design is consistent with the documented safety case. REGDOC-1.1.2 and REGDOC-2.5.2 describe the regulatory expectations for ensuring sufficient design controls be established to ensure the design, and any subsequent change or safety enhancement, is carried out in accordance with the established processes and procedures, appropriate codes and standards, and consistent with prescribed limits in the safety analysis.

The processes for managing design changes and incorporation of Operating Experience (OPEX) are also outlined in CSA N286 – *Management System Requirements for Nuclear Facilities (2012 edition)*.

The processes for implementing and reviewing changes to the design of the facility are described in different DNNP plans:

- NK054-PLAN-01210-00108 (Sheet 5) – *Darlington New Nuclear Project (DNNP) Design Plan: Design Plan* [R2.5-31]. This plan specifies that GEH is responsible for executing the design in accordance with GEH internal design control processes and procedures. Changes in the design are to be managed in accordance with GEH internal engineering change control processes, and OPG will be notified of the design changes using GEH approved documentation.

- NK054-DP-01210-0001 – *Darlington New Nuclear Project (DNNP) Integrated Project Design Plan (IPDP)* [R2.5-12]. This plan specifies that GEH and OPG will follow established change management processes to ensure that all design changes affecting interface points are controlled, and that interface requirements at terminal points are met. These interface points are defined as any points where OPG and GEH management systems meet, and for which such interface requirements exist.

- NK054-PLAN-01210-00107 – *Darlington New Nuclear Project (DNNP) Construction Plan* [R2.1-13]. This plan establishes the processes to be followed to manage design changes during construction activities.

- NK054-PLAN-01210-00108 (Sheet 3) – *Darlington New Nuclear Project (DNNP) Design Plan: DNNP Quality Management Plan* [R2.1-11]. This plan specifies that changes to the design identified by contract partners must be controlled in accordance with each partner's respective Quality Assurance program. Proposed design changes must be identified, accompanied with a rationale and justification for the change, and reviewed by affected contract partners.

- NK054-PLAN-01210-00100 (Sheet 8) – *Licensing Program Management Plan* [R2.5-32]. This plan describes the processes involved in the communication of project changes, including changes to the design, to the CNSC.

In its submissions, OPG committed to updating its project governance documentation with its contractor partners, based on improvements to the Integrated Project Delivery model and in response to CNSC staff comments. CNSC staff will review the updated governance documentation as they become available.

The processes for managing changes to the design of the facility is described in each contract partners' respective documentation. Each partner is responsible for controlling and managing changes in their respective area of accountability. As described above, GEH manages changes to the design of the reactor, and the review of the changes, in accordance with its internal design control processes.

Subsection 4.14, *Configuration Management and Control*, of REGDOC-1.1.2, outlines expectations that an application for a licence to construct should describe the provisions to establish and maintain control over the configuration throughout the design of the reactor, including provisions to notify the CNSC where configuration changes will affect the submitted design. OPG has provided CNSC staff with notifications of design changes on a regular basis, in accordance with REGDOC-1.1.2.

GEH maintains a qualification and control program for engineering software, including configuration control of related software. CNSC staff reviewed GEH's

design control processes, as related to the management of changes to the design of the reactor and determined that changes to the design of the powerblock are managed in accordance with acceptable processes and procedures.

OPG document NK054-PLAN-01210-00035 – *DNNP Engineering Oversight Plan* [R2.1-11] requires that oversight activities also consider information gathered from OPEX. CNSC staff note that OPEX from BWRs operating globally has been applied to the design of the BWRX-300, and that the consideration of OPEX is described in GEH's internal design processes and procedures.

CNSC staff conclude that both OPG and GEH have adequate documentation to control, manage, assess, and evaluate changes to the design of the facility, including the consideration of relevant operating experience.

A.2.3 Facility Design

Subsection 4.5.4, *Facility Design*, of REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility* outlines expectations that an application describes the processes that relate to the overall adequacy of the design, including information applicable to the layout of the facility itself. The application should provide a description of the principal features and specifications of the facility.

Subsections 6.5, *Exclusion Zone*, and 6.6, *Facility Layout*, of REGDOC-2.5.2 – *Design of Reactor Facilities* also describe expectations for the design and layout of the facility structures. It is expected that the facility demonstrates consideration of the interfaces between safety, security, and safeguards provisions in various aspects of the facility's layout, including access and egress routes, minimisation of radiation exposures to workers, and the interaction of the building structure and support functions. The design of the facility is also expected to include provisions for an appropriately sized exclusion zone, based on factors such as evacuation needs, security requirements, environmental considerations, and land usage requirements.

A.2.3.1 Basic Technical Characteristics

In its application, OPG provided information on the basic technical characteristics of the reactor and its associated structures and systems. CNSC staff review of these structures, systems, and components (SSC) is presented throughout subsections A.2.4 – *Structure Design* and A.2.5 – *System Design* .

Chapter 1 of the PSAR [R2.4-1] provides an overview of the important technical parameters of the BWRX-300 reactor. Table A-11 below provides a summary of these characteristics:

Table A-11: Basic Technical Characteristics of the BWRX-300 Reactor

Parameter	Value
Core Coolant	Light water
Moderator	Light water
Containment Type	Dry, Steel-Plate composite structure
Reactor Thermal Power	870 Megawatts (MW) thermal
Reactor Electrical Power	300 MW (electrical)
Normal Heat Sink	Once-Through Lake water cooling from Lake Ontario (see subsection A.2.4.5 – *The Normal Heat Sink and the Condenser Cooling Water (CCW) System*)
Ultimate Heat Sink	Isolation Condenser Pools (see subsection A.2.5.5.2 – *The Isolation Condenser System as a System Supporting the Emergency Core Cooling Function*)
Reactor Coolant Design Pressure	10.3 Megapascals (MPa)
Fuel Type and Enrichment	Uranium dioxide pellets of <5% U-235 enrichment
Reactor Pressure Vessel Dimensions	Approximately 4 metres in diameter Approximately 26 metres in height
Fuel Pool Capacity	Up to 8 years of spent fuel, plus one core of new fuel, and one core off-load capacity
Reactivity Control Methods	Control Rod Assemblies, driven by Fine-Motion Control Rod Drives (see subsection A.2.5.4.3 – *Design of Reactivity Control Systems*)
Plant Footprint	Approximately 9,800 square metres
Exclusion Zone	350 metres radius from exterior of the Reactor Building.

A.2.3.2 Layout of Systems and Equipment in the Facility

Subsection 4.5.4 of REGDOC-1.1.2 also states that the application should describe basic technical and schematic drawings of major facility structures,

including the details of the physical location of the facility, its connections with the electrical grid, and means of access to the site by rail, road, or water.

Chapter 1 of the PSAR includes several drawings that provide an overview of the location, means of access to the site, and the interconnections with the provincial electrical grid.

Figure A-1 below provides an overview of the Darlington Nuclear site, including the relative location of the DNNP to the existing Darlington Nuclear Generating Station (DNGS). The DNNP site boundary is shown in the Figure in yellow colouring, with existing DNGS facilities and structures shown in magenta colouring. The existing CN Rail line is shown in the upper half of the Figure bisecting the site from east to west, with the existing DNGS switchyard is shown in the centre of the Figure.

Figure A-2 below provides a detailed overview of the proposed single-unit deployment of the BWRX-300 reactor at the DNNP site. This Figure shows the BWRX-300 powerblock structure, consisting of the Reactor Building, the Turbine Building, the Radwaste Building, and the Control Building, as well as associated supporting structures.

The DNNP site is proposed to include the infrastructure and supporting buildings and structures to enable power operation of the BWRX-300, including:

- An Administration Building, housing office spaces for OPG staff as well as a simulator training space to support a full-scope and desktop simulator and other additional training space.
- A Warehouse Building to provide for storage of components and equipment, with space available for maintenance and calibration of equipment as required.
- A Steel-Plate Concrete Composite facility to assemble the composite components for the Containment, Reactor Building foundation, and other associated structures.
- Improvements to the Holt Road, including the completed Holt Road extension to form part of the heavy haul route to transport components to the DNNP site. This supporting infrastructure will also include upgrades to other associated heavy haul routes along the lakeshore.
- Stormwater management features across the site to manage runoff of stormwater to surface water features to the ultimate Lake Ontario discharge point.

The DNNP Switchyard is proposed to be located north of the BWRX-300 powerblock, to the east of Holt Road and south of the CN Rail tracks. This switchyard will have two primary 230 kilovolt (kV) lines connected from the powerblock to the switchyard. One of these lines connects the Generator step-up transformer, with the other connected to the Reserve Auxiliary Transformer. The

outputs of the switchyard will connect to the existing high-voltage distribution system north of the DNNP site.

Figure A-1: Overview of the Darlington New Nuclear Site

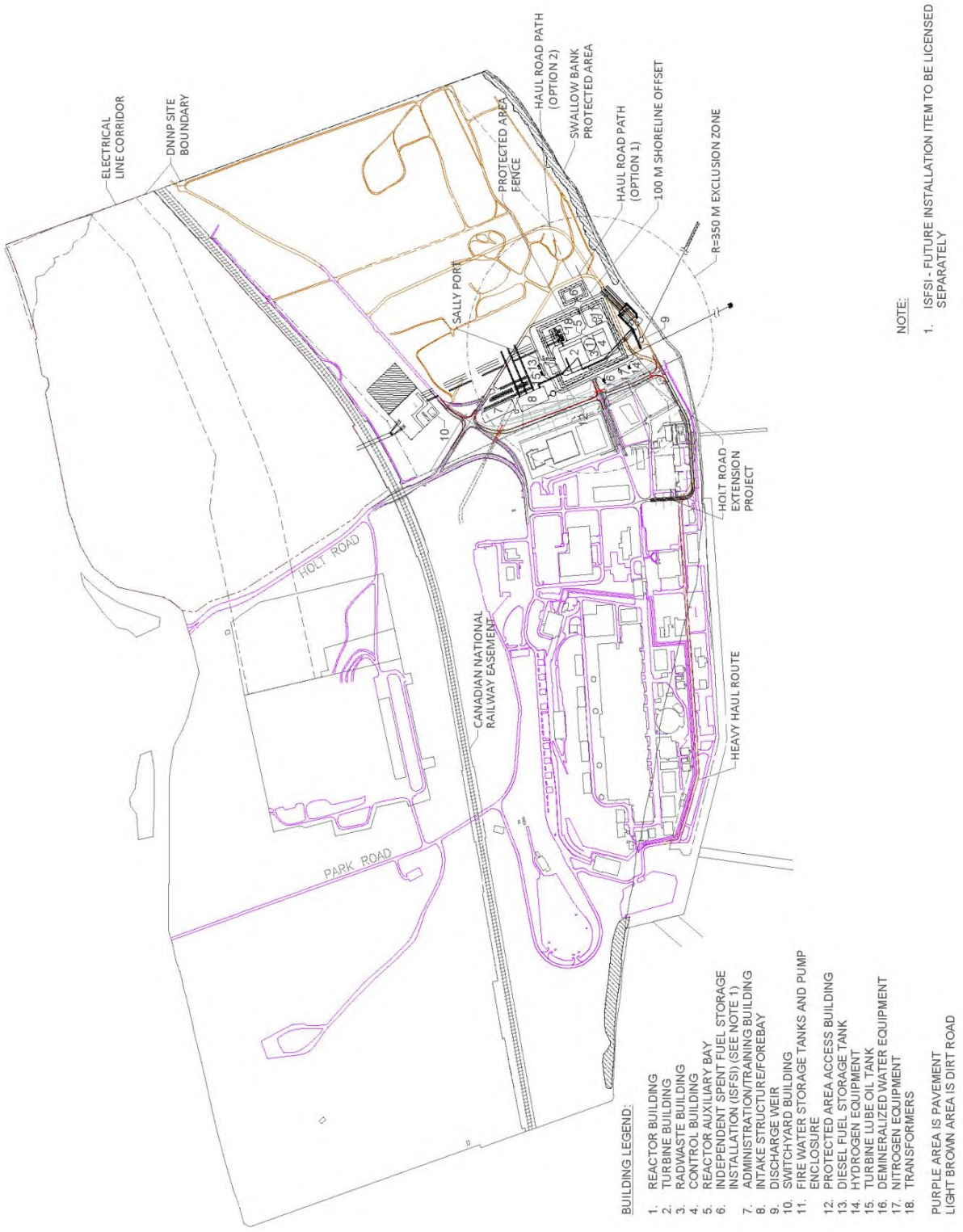
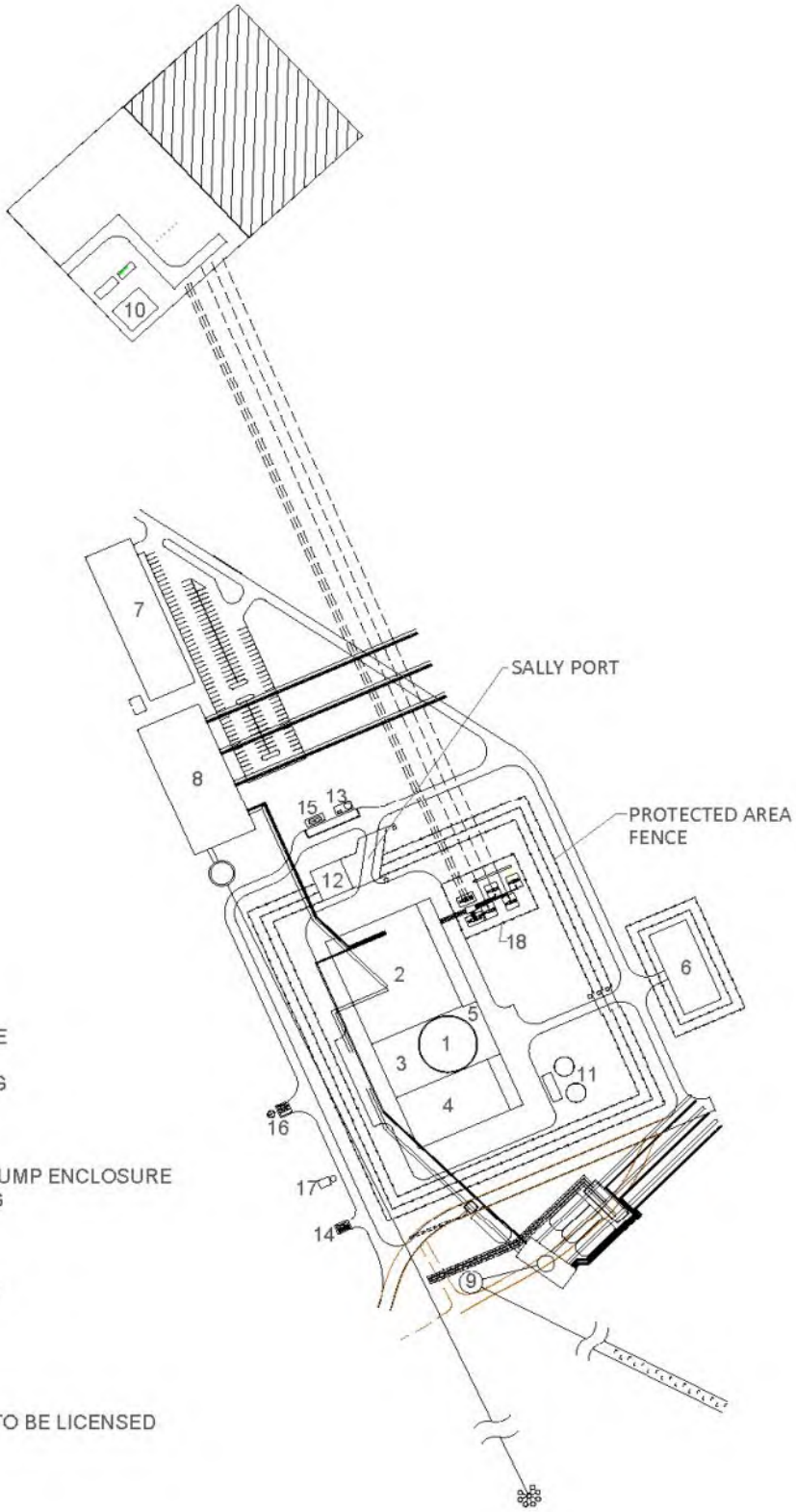


Figure A-2: DNNP BWRX-300 Facility Layout (Source: GE Hitachi)



BUILDING LEGEND:

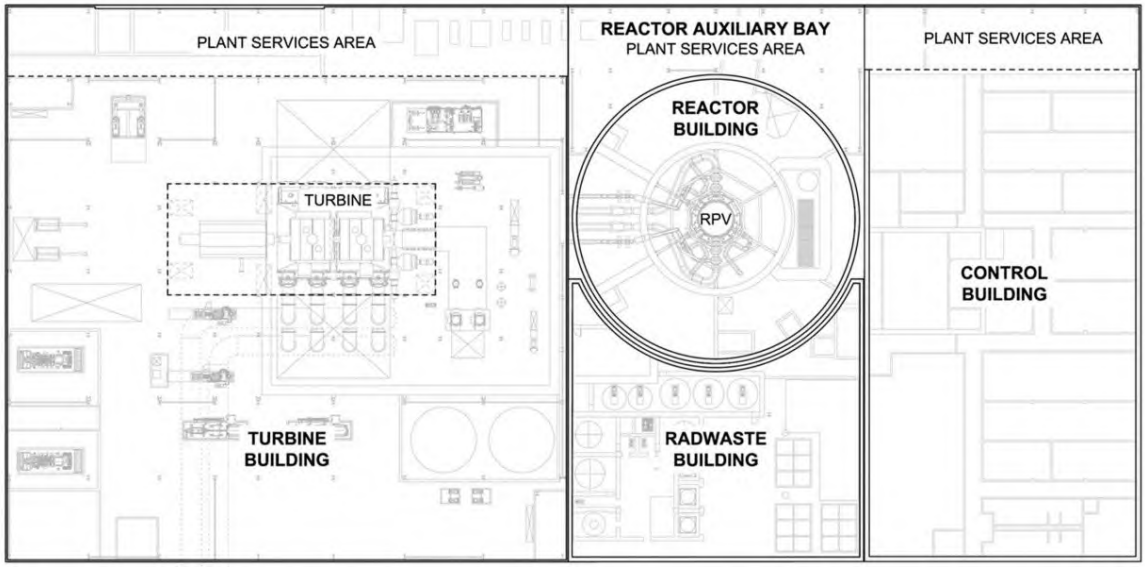
1. REACTOR BUILDING
2. TURBINE BUILDING
3. RADWASTE BUILDING
4. CONTROL BUILDING
5. REACTOR AUXILIARY BAY
6. INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI) (SEE NOTE 1)
7. ADMINISTRATION/TRAINING BUILDING
8. INTAKE STRUCTURE/FOREBAY
9. DISCHARGE WEIR
10. SWITCHYARD BUILDING
11. FIRE WATER STORAGE TANKS AND PUMP ENCLOSURE
12. PROTECTED AREA ACCESS BUILDING
13. DIESEL FUEL STORAGE TANK
14. HYDROGEN EQUIPMENT
15. TURBINE LUBE OIL TANK
16. DEMINERALIZED WATER EQUIPMENT
17. NITROGEN EQUIPMENT
18. TRANSFORMERS

NOTE:

1. ISFSI - FUTURE INSTALLATION ITEM TO BE LICENSED SEPARATELY

Figure A-3 below provides an overview of the layout of the proposed buildings and structures within the BWRX-300 powerblock. A discussion of the purpose and design of each of these buildings and structures is provided in subsection A.2.4 – *Structure Design* below.

Figure A-3: Plan View Showing the Layout of the Buildings within the BWRX-300 Powerblock Structure (Source: OPG)



A reactor's normal heat sink is designed to remove heat from the steam generation process to a large body of water during normal operations. For the DNNP, water will be withdrawn from Lake Ontario to flow through the Main Condenser to remove the excess energy from the turbine exhaust. Heated condenser cooling water will be sent back to Lake Ontario.

Cooling water from Lake Ontario will be delivered to an intake structure through an intake tunnel, which then is sent for collection in a Forebay. The Forebay contains circulating cooling water pumps, which will deliver the cooling water through the plant Main Condenser, before returning it to Lake Ontario through a discharge tunnel and through an outfall diffuser system. Subsection A.2.4.5 – *The Normal Heat Sink and the Condenser Cooling Water (CCW) System* further describes the implementation of the condenser cooling water system for the DNNP.

A.2.4 Structure Design

Subsection 4.5.5, *Structure Design*, of REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility (version 2)* and REGDOC-2.5.2 – *Design of Reactor Facilities* describes CNSC expectations that an application for a licence to construct to provide information on the design of the site layout and on civil engineering works and structures associated with the nuclear facility.

The application should present design information sufficient for the proper and safe construction of buildings, infrastructure, and site works, and includes supporting materials equivalent to the requirements to obtain building permits.

Subsection 7.15, *Civil Structure*, of REGDOC-2.5.2 outlines expectations that the design of the reactor facility specifies the required performance for civil structure safety functions in all operational states, design-basis accidents (DBAs), and design extension conditions (DECs). Civil structures important to safety should be designed to meet the serviceability, strength, and stability requirements for all possible load combinations under normal operation, anticipated operational occurrences (AOO), DBAs, and DECs, including for external hazards. These structures should also be designed to minimise the probabilities and impacts of internal hazards such as fires, explosions, smoke, flooding, missile generation, pipe whips and jet impacts, or fluid release due to pipe breaks.

The design of civil structures for the DNNP should adhere to the expectations of the *National Building Code of Canada* [R2.5-24] and the *National Fire Code of Canada* [R2.5-33], respectively. Structures that have an importance to nuclear safety should be designed to meet the expectations of CSA N291 – *Requirements for Nuclear Safety-Related Structures* [R2.5-34], the applicable portions of the CSA N287 series of standards, as well as the CSA N289 series of standards [R2.5-35].

In its application, OPG describes the preliminary design of civil structures and the role and function of each structure in the safety case for the BWRX-300 reactor.

CNSC staff note that the information related to the design of civil structures and buildings submitted in the application is preliminary and subject to change as the design progresses. CNSC staff will verify OPG's detailed structure design for civil structures, including design specifications, models and analyses, and design reports as the design progress to ensure compliance with applicable regulatory requirements, codes, and standards.

To provide context around the estimated size of each of the buildings, Table A-12 below provides the approximate external dimensions of the various buildings in the BWRX-300 powerblock. CNSC staff note that these dimensions are based on the preliminary information provided in OPG's application.

Table A-12: Approximate External Dimensions of Buildings within the BWRX-300 Powerblock

Building	Length (metres)	Width (metres)	Highest Roof Elevation (metres)
Reactor Building	36.0 (diameter)	36.0 (diameter)	30 (top of dome)
Turbine Building	70.0	69.0	30.0
Radwaste Building	38.0	25.0	24.0

Building	Length (metres)	Width (metres)	Highest Roof Elevation (metres)
Control Building	35.0	69.0	10.0
Reactor Auxiliary Bay	38.0	18.0	10.0

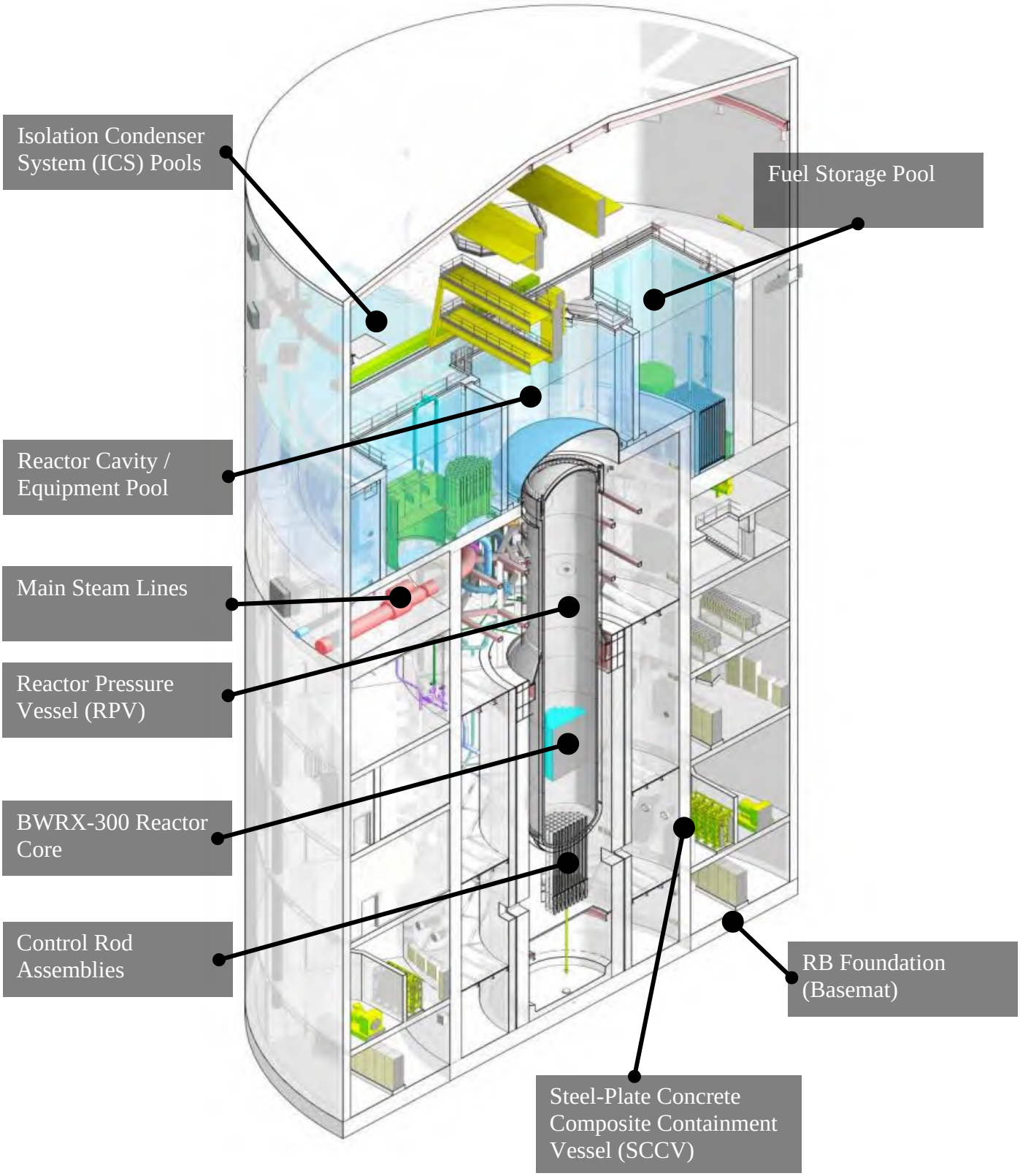
A.2.4.1 Reactor Building

Figure A-4 below shows a cut-away representation of the Reactor Building (RB) structure, highlighting the key systems, structures, and components (SSC) discussed throughout subsection A.2.5 – *System Design*:

- The Reactor Pressure Vessel (RPV) is shown in the centre, with the reactor core highlighted in bright blue towards the bottom of the RPV and the water-filled reactor cavity immediately above the RPV Head. Subsection A.2.5.4.1 – *The Reactor Pressure Vessel (RPV)* provides further information on the RPV.
- The Control Rod (CR) Assemblies, which penetrate the base of the RPV are illustrated as poised below the RPV. Subsection A.2.5.4.3 – *Design of Reactivity Control Systems* provides an overview of the BWRX-300 CR Assemblies.
- The Steel-Plate Concrete Composite Containment Vessel (SCCV) is represented as the double-thick wall surrounding the RPV.
- The Fuel Storage Pool, which contains both fresh and irradiated fuels as described in subsection A.2.5.10 – *Fuel Handling and Storage Systems* below, is situated to the right of the reactor cavity.
- The Main Steam Lines (MSL), as described in subsection A.2.5.8.1 – *Main Steam Lines (MSL)* below, represented as the red pipe leading from the SCCV and into the Turbine Building (TB).
- The Isolation Condenser System (ICS) is also housed within the RB, with each of the three separate pools surrounding the reactor cavity pool. Subsection A.2.5.5.2 – *The Isolation Condenser System as a System Supporting the Emergency Core Cooling Function* provides further information on the ICS.

The RB is a Safety Category (SC) 1 (see subsection A.2.2.6.1 – *Safety Classification*), Seismic Category A (see subsection A.2.2.6.3 – *Seismic Category*) cylindrical structure embedded approximately 36 metres below-grade, that is placed on a circular foundation (referred to as the “basemat”) that supports the SCCV, containment internal structures, and the RB superstructure itself. The walls of the RB and containment structures carry the vertical loads from the structure to the foundation, with lateral loads transferred to the walls by the roof, floor diaphragms, and the containment support structures.

Figure A-4: BWRX-300 Reactor Building General Arrangement (Section View) (Source: GE Hitachi)



The RB structure encloses the containment structure, which is comprised of the SCCV, the containment closure head and other metallic components, and associated internal containment structures.

The portion of the RB below-grade contains the RPV, the SCCV, and other important systems and components to mitigate the impacts of external hazards (e.g., aircraft impacts, adverse weather, fires, and earthquakes). This portion of the RB also contains reactor support systems, and the SC1 power supply and associated equipment.

OPG intends to use a novel "diaphragm-plate steel composite" (DP-SC) to construct the RB, the containment structure, and the RPV pedestal. To support the use of this structure and advanced construction technique, OPG provided a GEH Licensing Topical Report (LTR) describing the design approach of steel composite structures which is under review by both CNSC and USNRC staff as a joint project under the Memorandum of Cooperation (MOC). The CNSC and USNRC have published a *Joint Report on GEH BWRX-300 Steel-Plate Composite (SC) Containment Vessel (SCCV) and Reactor Building Structural Design White Paper*, documenting the conclusions of the review.

OPG stated that the DP-SC used for containment will be designed, fabricated, constructed, examined, and tested to the applicable portions of ASME BPVC Section II, Division 2 requirements, augmented by the requirements outlined in the LTR.

The DP-SC structures OPG will use in the construction of structures that do not form part of containment (e.g., the RB) will conform to modified criteria and requirements for the design, of ANSI / American Institute of Steel Construction (AISC) N690 – *Specification for Safety-Related Steel Structures for Nuclear Facilities* (2018) Chapters NM, NN, and Appendix N9 for the design, analysis, fabrication, construction, examination, and testing of these structures.

OPG has committed that, although the CSA N287 series of standards that apply to concrete structures used in traditional construction (e.g., such as in the CANDU reactors) do not provide a complete set of requirements for DP-SC structures, applicable sections of the N287 standards will be met where practicable.

CNSC and USNRC staff witnessed the testing of steel plated concrete specimens by GEH as part of the US Department of Energy sponsored National Reactor Innovation Center Demonstration Program at Purdue University. The test confirmed aspects of the design basis while further information is expected. Based on the information available, CNSC staff have determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. CNSC staff will continue to work closely with USNRC to verify that OPG's detailed design for integrated RB structures meet regulatory expectations, codes, and standards when design information is submitted.

A.2.4.2 The Turbine Building

The Turbine Building contains the turbine-generator set, the Standby Diesel Generators (SDG), the Main Condenser, the Condensate and Feedwater systems, as well as the various turbine-generator support systems. CNSC staff's discussion of these systems can be found in the following subsections:

- The Turbine-Generator is discussed in subsection A.2.5.8.2 – *Turbine-Generator System (Main Turbine Equipment)* and its associated subsections.
- The Standby Diesel Generators are discussed in subsection A.2.5.6 – *Electrical Power Systems* and A.2.5.9.4.2 – *Standby Diesel Generator (SDG) Supporting Systems*.
- The Condensate and Feedwater Systems are discussed in subsection A.2.5.8.3 – *Condensate and Feedwater Systems*.

The TB is a Safety Class 2 structure that is not seismically categorised as per the rules described in A.2.2.6.3 – *Seismic Category*; however, it has been evaluated for seismic interactions to ensure that it will not compromise the structural integrity or safety functions of the Reactor Building following a design-basis earthquake or extreme tornado wind conditions.

As described in OPG's application, the preliminary design of the TB structure consists of a steel frame system with steel columns, beams, roof bar joists, and floor/roof decks as load-carrying systems. OPG will be required to provide detailed design information prior to construction of the Turbine Building.

A.2.4.3 The Radwaste Building

The Radwaste Building (RWB) contains equipment for the handling, processing, and packaging of liquid and solid radioactive wastes, as well as Offgas system charcoal adsorbers used for processing radioactive gases. The RWB is a Safety Class 3 building and is categorised as a RW-IIa seismic structure, in accordance with USNRC Regulatory Guide 1.143 – *Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water Cooled Nuclear Power Plants* [R2.5-36].

As described in OPG's application, the preliminary design of the RWB structure consists of reinforced concrete walls and floor slabs, supported on a shallow reinforced concrete mat foundation with roof joists and a composite roof deck.

CNSC staff review and discussion of the systems and processes that would take place in the RWB can be found in the following subsections:

- The Fuel Handling System, as related to the transfer of fresh and used nuclear fuel into and from the reactor, is discussed in subsection A.2.5.10 – *Fuel Handling and Storage Systems*.
- The Solid and Liquid Radioactive Waste systems are discussed in subsection A.2.5.11 – *Waste Treatment and Control Systems*.

OPG will be required to provide detailed design information prior to construction of the Radwaste Building.

A.2.4.4 The Control and Reactor Auxiliary Buildings

The Control Building (CB) contains the Main Control Room, the Emergency Operations Centre, as well as various electrical, control, and instrumentation equipment. It is a Safety Class 2 structure that is non-seismic; however, has been evaluated for seismic interactions to ensure that it will not compromise the structural integrity or safety functions of the RB.

As described in OPG's application, the preliminary design of the CB consists of a building frame system with perimeter reinforced concrete walls, interior steel columns, beams/girders, roof bar joists, and a steel-concrete roof deck as a gravity load-carrying system.

As described in OPG's application, the preliminary design of the RAB structure consists of a single-storey structural steel building.

The purpose of the RAB is to provide a dedicated space for the handling of fresh fuel, to allow for the movement of the spent fuel cask, and to provide equipment and personnel ingress and egress to the RB. The RAB is a Safety Class 2 building and is categorised as non-seismic; however, it has been evaluated for seismic interactions to ensure it will not compromise the structural integrity or safety function of the RB following a design-basis earthquake or extreme tornado.

OPG will be required to provide detailed design information prior to construction of the Control and Reactor Auxiliary Buildings.

A.2.4.5 The Normal Heat Sink and the Condenser Cooling Water (CCW) System

Description of the Normal Heat Sink

As described in subsection A.2.3.2 – *Layout of Systems and Equipment in the Facility* above, the function of a facility's normal heat sink is to remove excess heat exhausted from the facility's turbines to a large water body. The Normal Heat Sink for the BWRX-300 facility is designed based on a once-through lake water cooling principle, which includes the Condenser Cooling Water (CCW) supporting system.

As will be described in subsection A.2.5.8.3 – *Condensate and Feedwater Systems* below, the BWRX-300 employs a Main Condenser system whose function is to condense the exhausted steam from the low-pressure turbine and return it to the liquid phase and, ultimately, return it to the reactor core. The Main Condenser is cooled by a separate set of piping, using water from Lake Ontario, to extract remaining heat and return this heated water back to the lake.

Chapter 1 of the PSAR [R2.4-1] describes the facility's Normal Heat Sink, which consists of:

- An intake tunnel, embedded in the lakebed to minimise the potential for impacts to aquatic habitats, and sized to provide the required cooling water flow to the plant. The design of the CCW intake structure must comply with the requirements specified in DNNP Commitment D-C-1 *Condenser Cooling Water Design*, as documented in OPG document *Darlington New Nuclear Project Commitments Report* [R1-6].
- A discharge tunnel and associated diffusers, also embedded in the lakebed to comply with the requirement to minimise the temperature increase and consequential thermal and flow effects from discharge of heated plant water. The discharged water must not exceed 2 degrees Celsius above ambient to minimise potential impacts on the aquatic environment.
- A pumphouse and forebay, with associated superstructures, pumps, and related equipment to pump the collected water from the forebay through the plant's Main Condenser cooling system.

Environmental Effects of the Construction of the CCW System

The construction of the Condenser Cooling Water (CCW) system will require in-water activities, that could affect both the surface water and aquatic environments due to creation and migration of a sediment plume from construction activities and underwater blasting. Construction activities will therefore require mitigation measures, such as the implementation of sediment nets, and authorisation under the *Fisheries Act* for any destruction of fish by means other than fishing. Underwater blasting will require compliance with guidelines and implementation of compensatory measures to minimise fish mortality under section 32 of the *Fisheries Act*.

OPG has conducted a fish habitat characterisation in the local study area to determine a location for the CCW intake and outfall structures that would minimise the impacts on the aquatic environment. These studies identified the optimal depth for the siting of these structures is within the 10 – 15 metres depth from the surface of the lake, to ensure minimal interference with the preferred spawning depth of Lake Whitefish and Deepwater Sculpin which prefer spawning regions at shallower and deeper depths, respectively.

There will be potential for fish impingement and entrainment throughout the operating life of the CCW system. OPG will be required to maintain a *Fisheries Act* authorisation and monitor losses due to fish impingement and entrainment throughout the operating life of the facility. OPG will also be required to propose, implement, and monitor offsetting measures commensurate with the observed fish losses.

CNSC staff note that CCW construction activities will be subject to environmental monitoring through the ongoing EA Monitoring and EA Follow-Up program [R2.8-7]. Additional mitigation measures may be required, should the monitoring

program identify potential environmental effects, to verify that the conclusions of the EA remain valid.

A.2.5 System Design

Subsection 4.5.6 of REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility* outlines expectations to describe relevant systems, pressure-retaining structures, systems, and components (SSC), environmental and seismic qualification of equipment, protection against electromagnetic interference, and fire safety and fire protection systems.

CNSC staff review of the design of the specific systems of the BWRX-300 reactor facility is presented in the following subsections.

A.2.5.1 Pressure-Retaining Structures, Systems, and Components

Subsection 7.7, *Pressure-Retaining Structures, Systems and Components*, of REGDOC-2.5.2 – *Design of Reactor Facilities (version 1)* [R1-8] outlines the expectations regarding adequate demonstration that all pressure-retaining structures, systems, and components (PRSC) are protected against overpressure conditions. PRSCs are expected to be classified, designed, fabricated, constructed, inspected, and tested in accordance with established standards.

In its application, OPG has committed to use CSA standard N285.0 – *General Requirements for Pressure-Retaining Systems and Components in CANDU Nuclear Power Plants* [R2.5-22] and the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* [R2.5-37] (BPVC) as the basis for the design and fabrication of PRSCs for the DNNP. These codes and standards are well-established and implemented for PRSCs at existing Canadian nuclear power plants.

The BWRX-300 design consists of a single coolant flow loop that extends from the reactor core to the turbine side, and is referred to as the reactor coolant pressure boundary (RCPB).

Both the N285.0 standard and the BPVC code establish detailed design and fabrication rules for PRSCs based on their assigned Code Classification. Additionally, OPG has indicated that USNRC Regulatory Guide RG 1.26 – *Quality Group Classifications and Standards for Water-, Steam-, and Radioactive Waste-Containing Components of Nuclear Power Plants* [R2.5-21] as the basis for assigning Code Classes for BWRX-300 PRSCs (refer to subsection A.2.2.6.2 – *Pressure Boundary Quality Group* above for a discussion on pressure-boundary code classification).

CNSC staff note that the Code Class rules set out in CSA N285.0 are specific to the CANDU heavy-water design and are themselves not directly applicable to a BWR design. Some of the rules outlined in N285.0 will be applicable to any proposed alternative approach, such as with the assessment of the effects of failures and

estimated consequential releases, as this is an important criterion defined in the N285.0 code classification process for PRSCs.

CNSC staff have reviewed OPG's proposed implementation of N285.0, ASME BPVC, and the use of USNRC RG 1.26 for assigning Code Classifications and conclude there are no concerns with the implementation of RG 1.26. CNSC staff requested OPG develop a code classification procedure. OPG has committed to submit this procedure and the proposed PRSC Code Classes for CNSC staff review and acceptance prior to the construction of the Reactor Building.

OPG has also indicated that the facility is designed for protection against pipe failures, both inside and outside of containment, to ensure that no loss of essential SSC functionality occurs, and the reactor can be safely shut down under such accident scenarios. Further, OPG has stated that the facility design also addresses high- and moderate-energy fluid system piping breaks both inside and outside of containment.

OPG has proposed the application of USNRC guidance on the "break exclusion zone" (BEZ) for such postulated pipe failures. Neither REGDOC-2.5.2 nor CSA N285.0 provide guidance for the use of this methodology, therefore CNSC staff are reviewing OPG's proposal as an alternative approach to meeting regulatory requirements. Implementation of the BEZ would eliminate consideration of the dynamic effects of a pipe break from the design basis and safety demonstration. Consequently, the implementation of the BEZ can reduce the number of pipe whip restraints and the resultant size of the containment volume. Subsection A.2.5.4.9 – *Break Exclusion Zone* provides more information on the BEZ methodology.

In its application, OPG indicates that various leak detection methods are implemented in the BWRX-300 design, that collectively aim to ensure leaks are detected before failure of the component or pipe and, to the extent practicable, identify the location of the source of the leak.

CNSC staff's review of OPG's application has noted that OPG has committed to meeting the code classification requirements for pressure-retaining systems and components as required by REGDOC-2.5.2, and in addition, will submit a request for a variance from N285.0 for CNSC staff review and approval. CNSC staff have identified areas which OPG is required to provide additional or more detailed information to address regulatory expectations. CNSC staff will review OPG's submissions to ensure regulatory expectations have been met and that OPG has adequately demonstrated how the use of USNRC RG 1.26 as a variance to code classification rules meets the expectations of CSA N285.0.

A.2.5.2 Equipment Qualification

Subsection 7.8, *Equipment Environmental Qualification*, of REGDOC-2.5.2 specifies that the design of the reactor is expected to include an equipment environmental qualification (EQ) program to ensure that the fundamental safety functions of the reactor can be carried out in the event of an AOO or DBA.

OPG has described the EQ of equipment in the *Preliminary Safety Analysis Report* [R2.4-1], which has described the essential elements of an EQ program. The PSAR provides an overview of the description of the requirements of an EQ program, in accordance with the expectations of CSA N290.13 – *Environmental Qualification of Equipment for Nuclear Power Plants (2018 edition)* [R2.5-38] and subsection 7.8 of REGDOC-2.5.2.

CNSC staff have concluded that OPG has demonstrated that the appropriate measures will be in place to implement an equipment EQ program that meets regulatory requirements.

A.2.5.3 Seismic Qualification

Subsection 7.13, *Seismic Qualification and Design*, of REGDOC-2.5.2 requires that all SSCs be qualified to meet the requirements of Canadian national standards, or their equivalent international standards as appropriate. The design shall ensure that SSCs important to safety are qualified to a design-basis earthquake (DBE) and are categorised appropriately.

Seismic Qualification (SQ) expectations for nuclear plants are described in CSA standard N289.1 – *General Requirements for Seismic Design and Qualification of Nuclear Power Plants* [R2.5-39], which provides both quantitative methods (e.g., testing, analysis, or a combination) as well as qualitative methods (e.g., an experience-based approach) for seismic qualification in the design. In the application, OPG states that the N289 series of standards are used to provide high-level seismic expectations to demonstrate compliance with the provisions of REGDOC-2.5.2.

The N289.1 standard requires that SSCs in CANDU-type nuclear power plants "*be designed and constructed to ensure that the effects of an earthquake do not lead to unacceptable radiation exposure.*" Though this requirement is specific to CANDU reactors, this general design principle is applicable for any type of nuclear reactor.

CNSC staff have reviewed OPG's methodology to determine its seismic classification list and categorisation of each SSC in the BWRX-300 design, as this categorisation determines the extent to which SSCs require SQ, and found that OPG will be required to provide additional information to demonstrate that, where required, SQ has been considered in the design of SSCs important to safety. As discussed in subsection A.2.2.6 – *Safety Classification of Structures, Systems, and Components*, CNSC staff have identified areas where OPG will be required to provide further information as the design progresses, such as the identification of which SSCs will be seismically qualified.

A.2.5.4 Reactor and Reactor Coolant System

Subsection 4.5.8, *Reactor and Reactor Coolant System*, of REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility (version 2)* and

REGDOC-2.5.2 outlines CNSC expectations regarding the reactor, reactor core and reactor coolant system, and means of shutdown.

The application should provide information about the reactor, including a summary description of:

- The mechanical, nuclear, thermal, and hydraulic behaviour of the various reactor components.
- The fuel, reactor internals, and reactivity control systems.
- Related instrumentation and control (I&C) systems in place to demonstrate the capability of the reactor to perform its design safety functions in all operating states, throughout the design life.

CNSC staff's review of the provided information regarding the reactor and the reactor coolant system is presented in the following subsections.

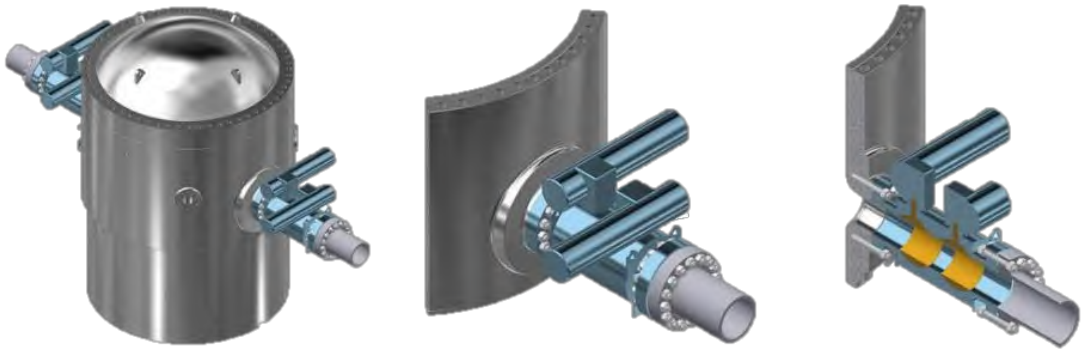
A.2.5.4.1 The Reactor Pressure Vessel (RPV)

The Reactor Pressure Vessel (RPV) is a vertical, cylindrical pressure vessel used to contain the reactor core, coolant, and associated systems and components in a BWR. The RPV contains the light water coolant and moderator and forms a flow path for recirculation flow. The RPV also contains the reactor core with the nuclear fuel assemblies, saturated steam, fuel supporting structures, and the necessary reactor internals for its safe operation.

The RPV is a Safety Class 1 (see subsection A.2.2.6.1 – *Safety Classification* above) pressurised vessel, designed to meet the expectations of ASME BPVC Section III, Division 1. Its purpose is to ensure the ability to function as a radioactive material barrier under normal operations, AOOs, DBA, and DEC plant states.

The RPV has integral Reactor Isolation Valves (RIV), which, among other essential functions, enable isolation of the RPV if required. Flanged connections are provided at the base of the RPV for each fine-motor Control Rod Drive mechanism and each neutron detector. It is designed such that all nozzles are located above the top of active fuel (TAF). Figure A-5 provides an illustration of the location and structure of the RIVs.

Figure A-5: A Representative View of the Integral Reactor Isolation Valves (RIV) (Source: GE Hitachi)



The RPV has several connected pipes: two (2) outlets for the Main Steam Lines (MSL) where flow limiters are installed, two (2) feedwater inlets, three (3) steam outlets to the redundant Isolation Condenser System (ICS) trains, and three (3) condensate inlets from the ICS trains. Due to the diameter of these pipes, each line has isolation valves installed to comply with design rules requiring redundancies. During normal operation, each ICS steam line is open with the condensation lines remaining closed. In addition, several 2.5-centimetre diameter instrumentation lines are connected to the RPV.

A longer internal recirculating flow path is provided by an elongated chimney in the space extending from the TAF to the entrance of the steam generator assembly. Major components in the RPV include structural and mechanical elements and core support structures:

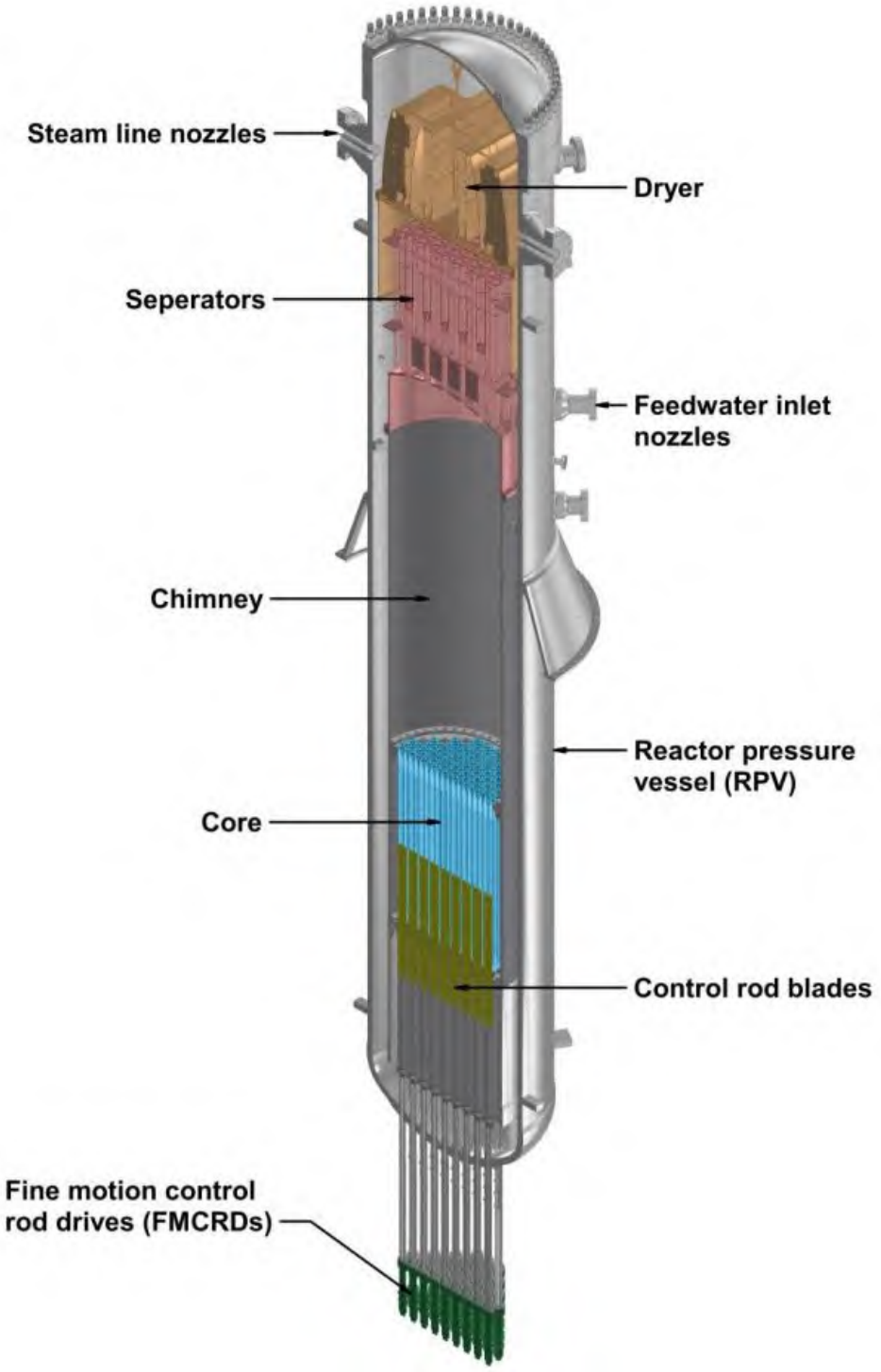
- RPV internal structures such as the chimney head, steam separator assembly, steam dryer assembly, internal piping, the RPV head vent, and nuclear instrumentation.
- Core support structures such as the shroud support, core plates, chimney, control rod guide tubes, and control rod drive housings.

The chimney is a long cylinder mounted to the top guide supporting the steam separator assembly. It is a Safety Class 1 component that forms the annulus separating the subcooled recirculation downward flow from upward steam-water mixture that exits the core through the main steam lines. This is unique to natural circulation BWRs and is used to extend the area of the RPV above the core and below the separator to increase the motive force and achieve a higher core flowrate.

The steam separator sits above the top of the chimney and serves a non-safety function to separate moisture from the steam before it proceeds to the turbine assembly. Steam dryers are provided to achieve a moisture content of < 0.1% at full reactor power, prior to proceeding to the high-pressure turbine, to prevent water carryover, cavitation, and consequential damage to the turbine blades.

Figure A-6 below shows a simplified representation of the RPV and associated major internal components.

Figure A-6: BWRX-300 Reactor Pressure Vessel Internal Structures (Source: GE Hitachi)



A.2.5.4.2 Design of the Fuel System

Subsection 4.5.8 of REGDOC-1.1.2 outlines CNSC's expectations that the application provides information concerning the thermal, mechanical, thermal-hydraulic, and material design of all fuel systems and components, and include a description of fuel manufacturing and a summary of in-core fuel management processes.

Subsection 4.2 of the PSAR [R2.4-1] includes a description of the physical design of the fuel system. CNSC staff reviewed the PSAR and its supporting documentation to ensure that OPG has adequate provisions in place to meet the regulatory requirements for the design of the fuel system.

Further regulatory requirements for the design of the fuel system are described in subsection 8.1.1, *Fuel Elements, Assemblies, and Design*, of REGDOC-2.5.2 – *Design of Reactor Facilities (version 1)*, and in subsections 5.3, 5.4.5, and 5.5 of REGDOC-2.4.1 – *Deterministic Safety Analysis* [R2.4-34]. CNSC staff's review focused on ensuring that the design of the fuel system will meet the fuel safety objectives:

- The fuel system is not damaged from normal operation and anticipated operational occurrences (AOO).
- Any damage to the fuel system is never severe enough to prevent insertion of control rods when required.
- Cooling of the fuel is maintained in all operational states of the reactor.

Within the regulatory context, "not damaged" refers to the fact that fuel rods do not fail, that the dimensions of the fuel system components remain within operational tolerances, and that functional capabilities are not reduced below those analysed in the safety analyses. A fuel rod "failure" refers to a loss of fuel rod integrity where the fuel rod is assumed to leak, and the cladding is breached. Constant cooling of the fuel, in general, refers to the concept that the fuel assembly will retain its rod-bundle geometry, with maintenance of adequate cooling paths, to remove residual heat even following a design basis accident (DBA) such as a loss of coolant accident (LOCA), and maintain integrity to allow for the fuel to be discharged from the reactor core.

OPG has indicated that the reference fuel design for the BWRX-300 reactor will be the GE Hitachi (GEH) "Global Nuclear Fuel Mk. 2" (GNF2) reactor fuel, currently in use in the existing fleet of GEH BWRs operating worldwide. This design was selected to ensure mechanical, nuclear, and thermal-hydraulic compatibility with earlier GNF designs.

The design of the GNF2 fuel consists of an assembly of 92 fuel rods and two large central water rods contained within a 10x10 array. Each fuel rod is comprised of a high-density uranium dioxide (UO_2) ceramic or a slightly poisoned uranium alloy with gadolinium (i.e., (U, Gd)O_2 alloy), stacked within a Zircaloy-2 cladding. The

fuel cladding has an inner zirconium liner that acts as a barrier to resist fuel rod failures due to fuel pellet-cladding interaction mechanisms. Any remaining atmospheric air from the assembled fuel rod is evacuated and is backfilled with helium during final welding and assembly.

OPG submitted bundle assembly and lattice arrangement figures in its application, and detailed drawings of subcomponents provided to CNSC staff include tie plates and spacers. Figure A-7 below shows a diagram and three-dimensional rendering of the GNF2 fuel assembly, indicating key some of the key components described above.

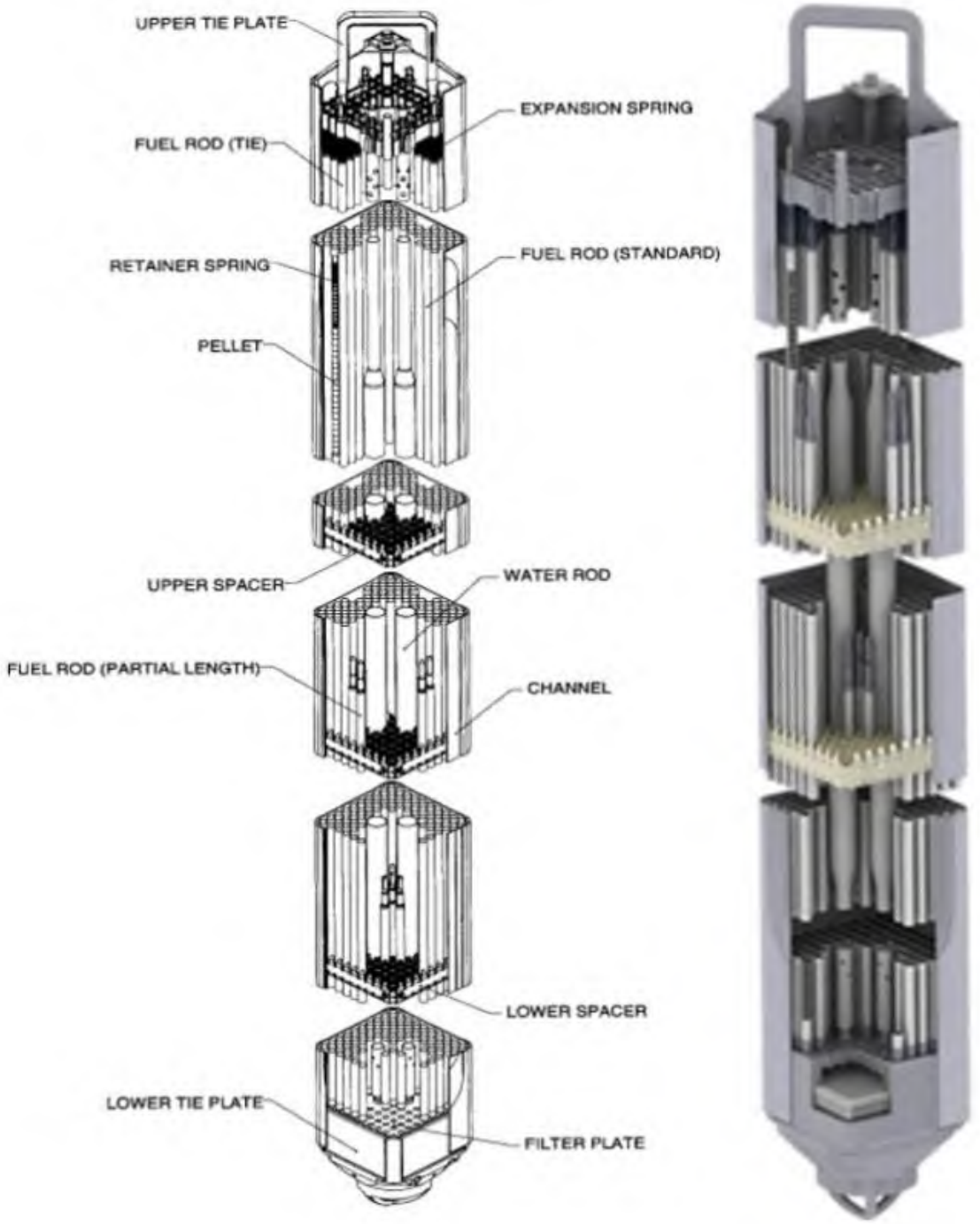
Staff note that manufacturing aspects of the fuel assembly, including mechanical assembly parameters, factory specifications, and quality control are described in subsection 4.2.5 of the PSAR; however, factory-level specifications of the fuel system assembly and its subcomponents are not provided.

The Global Nuclear Fuels supplier has developed a licensing framework with the USNRC called GESTAR II. This framework report consists of a description of fuel licensing criteria as well as the respective bases for the fuel thermal-mechanical, nuclear, and thermal-hydraulic analyses. This report also provides information and methodologies used to determine reactor limits, including design limits applicable to the fuel element itself, that are independent of a plant-specific application.

In its submission, OPG indicates this report provides assurance that Canadian regulatory requirements with respect to fuel design are met.

OPG also submitted two reports describing thermo-mechanical evaluations of GNF2 fuel [R2.5-40][R2.5-41], the first of which addresses design requirements for normal operation, specified in subsection 8.1.1 of REGDOC-2.5.2. The second report provides the outcome of evaluations performed by the fuel performance modelling code, intended to support safety analyses of accident scenarios. CNSC staff note that OPG has provided a REGDOC-2.5.2 “compliance matrix” to demonstrate that OPG’s submissions contain adequate information to comply with the relevant sections of REGDOC-2.5.2. As it pertains to the fuel system, CNSC staff have determined that this “compliance matrix” demonstrates compliance with CNSC regulatory expectations.

Figure A-7: Diagram and Rendering showing the GNF2 Fuel Assembly and Channel (Source: GE Hitachi)



OPG has submitted three technical reports that validate the fuel performance computer code, a Safety Evaluation Report prepared by the USNRC, as well as an additional report prepared by the US Pacific Northwest Nuclear Laboratory (PNNL). CNSC staff have reviewed these reports and note that elements of the

Safety Evaluation Report, as well as the report prepared by PNNL, specifically address technical requirements identified in Clause 10, *Validation*, of CSA N286.7 – *Quality Assurance of Analytical, Scientific, and Design Computer Programs (2016 edition)* [R2.4-36].

A.2.5.4.3 Design of Reactivity Control Systems

Subsection 4.5.8 of REGDOC-1.1.2 outlines expectations that the application for a licence to construct describe the design of reactor internal components and their design basis requirements, and that the information provided should complement other sections of the application that cover similar aspects of reactor fuel and its handling and storage.

In addition, subsection 8.1.1 of REGDOC-1.1.2 explains that the design of any reactivity control systems should provide means for detecting the levels and distributions of the neutron flux across the core. The design should provide sufficient information on these control systems, including design requirements for the systems, a demonstration that these systems are designed to provide the required functional performance, a description of how diversity and separation have been achieved, and a description of the rare of reactivity insertion and the depth of each control system.

Subsections 4.2.4, *Control Rods Design Evaluation*, and 4.5, *Reactor Internal Materials*, of the PSAR collectively address the physical design of reactor internal components. CNSC staff reviewed these sections of the PSAR and relevant supporting documentation to verify that the design of the control rods and reactor internal components are within regulatory expectations of REGDOC-2.5.2.

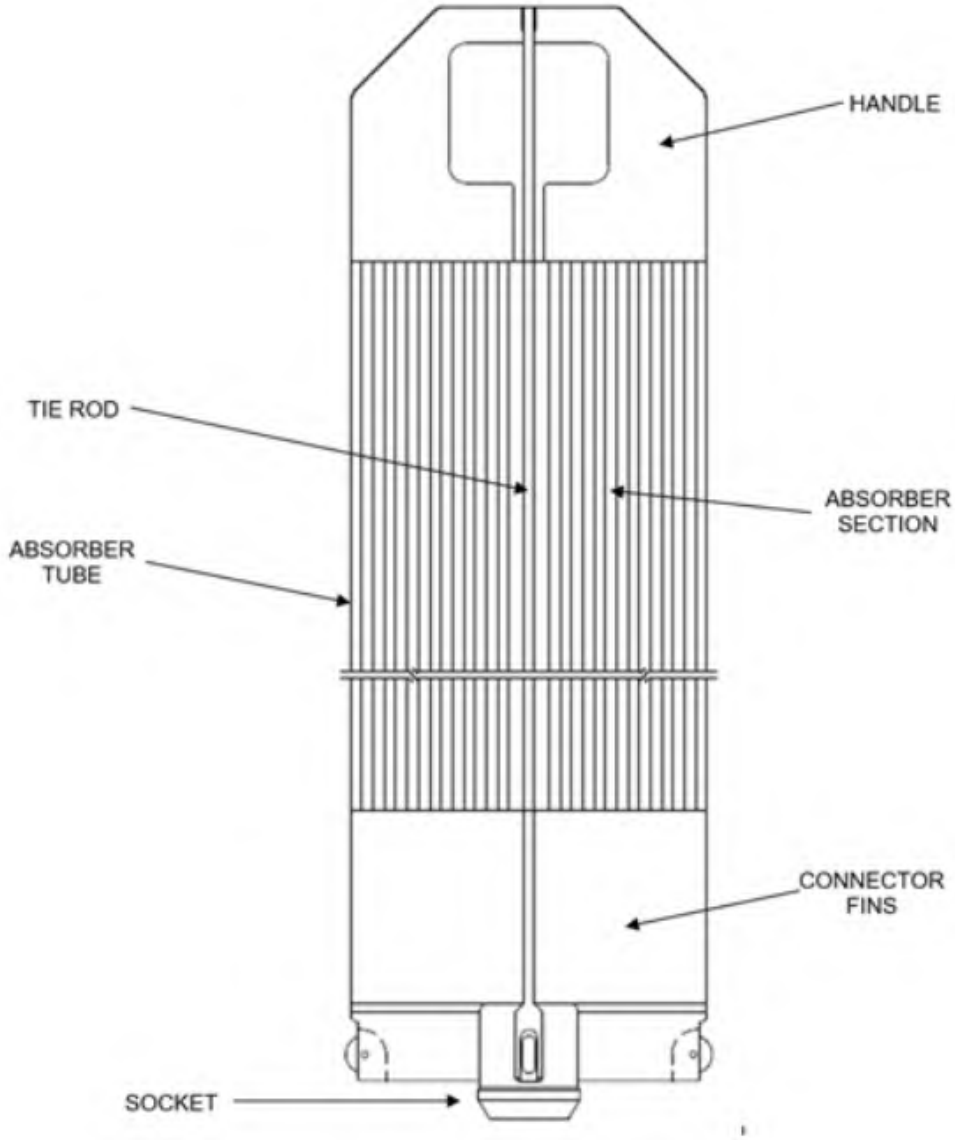
The control rods are designed to control the fission chain reaction, by providing stability and automatic control of the reactor power, and by minimising spatial instabilities in the local and regional distribution of power across the core. The control rods for the BWRX-300 are based on the design of the control blades used in all operating BWRs, and have been designed, evaluated, and analysed for the BWRX-300 deployment with operational data.

The control rods are similar to designs of control rods in use in existing BWRs worldwide, in that they are cruciform shaped and reside in the gaps between fuel assemblies to perform a dual function of power shaping and control over the reactivity of the core. The power shaping function is controlled during normal operations by manipulating selected patterns of control rods. The reactivity control function requires that all control rods be available for a “reactor scram” (reactor trip), or for nominal control over the reactivity of the core.

Control elements are connected to bottom-mounted, electro-hydraulically actuated control rod drive mechanisms (CRDM), allowing for either electric motor-controlled positioning (reactivity control function), or for hydraulic insertion (reactor trip function).

The structure of the control rod consists of a top handle section, an absorber section, and a bottom connector, assembled into a cruciform shape. The absorber section consists of an array of stainless-steel tubes filled either with boron carbide powder, or a combination of boron carbide capsules and hafnium rods. The connector section is positioned to allow for coupling to the CRDM. The movement of the control rods are restricted to the inter-assembly spaces created by adjacent fuel assemblies. There are handle pads and guide tubes in place to ensure consistent movement within this space as the rod moves into or out of the core. Figure A-8 shows a schematic of the control rod in used in the BWRX-300 design.

Figure A-8: Illustration Showing the Cruciform Control Rod Assembly in the Design of the BWRX-300 (Source: GE Hitachi)



OPG submitted a design report which describes the thermo-mechanical evaluations of control rod performance. CNSC staff review of this report notes that it demonstrates the design of the control rod meets acceptance criteria:

- The stresses, strains, and cumulative fatigue of control rod components are designed such that they will not exceed the ultimate stress or strain limits of the materials, the structure itself, or welded connections.

- The design of the control rod is evaluated to ensure it is capable of insertion into the core during all modes of plant operation, within the limitations assumed in the plant analysis.

- The materials used in the control rod design are compatible with the reactor environment.

The components of the fine-motor CRDMs that interface with the reactor coolant pressure boundary are the lower component housing and the upper component middle flange. These components are constructed from 300-series stainless steels, compatible with the reactor coolant, in accordance with Section III of the ASME BPVC, as expected by subsection 6.1 of REGDOC-2.5.2.

A.2.5.4.4 Nuclear Design and Core Nuclear Performance

Subsection 4.5.8 of REGDOC-1.1.2 outlines expectations that the application describes how the reactor meets the design basis requirements for the performance of the reactor core across several areas (e.g., nuclear fuel design, reactivity control systems, reactivity coefficients, and control of power distributions). The application should also describe key nuclear performance characteristics over the fuel cycle, including burnable poison distributions, neutron lifetimes and neutron populations, and core lifetimes and burn-up rates.

A detailed understanding of reactor core physics behaviour under all postulated operating conditions is essential to the design of a nuclear reactor, and to the credibility of postulated operating states and accident conditions analysed in the safety case. CNSC staff based its review criteria from subsection 8.1 of REGDOC-2.5.2 as well as REGDOC-2.4.1, including assurance that the following nuclear design and core nuclear performance safety objectives are met:

- The fission chain reaction is controlled during operational states.
- The maximum degree of positive reactivity, and its maximum rate of increase by insertion in operational states and DBAs, are limited by a combination of the inherent neutronic characteristics of the core, its thermal-hydraulic characteristics, and the capabilities of the control system and means of shutdown, so that no resultant failure of the reactor pressure boundary will occur, cooling capability will be maintained, and no significant damage will occur to the reactor core.

CNSC staff reviewed nuclear design and core nuclear performance information documented in subsection 4.3 of the PSAR [R2.4-1] as well as supporting documentation.

The reference BWRX-300 equilibrium core design was established to be a 12-month operating cycle. OPG submitted the loading pattern, the enrichment and burnable poison distributions for fresh fuel, cycle core performance summaries, and a description of shutdown margins in support of nuclear design information.

The reactor core is arranged as a vertical cylinder containing 240 GNF2 fuel assemblies, as described in subsection A.2.5.4.2 – *Design of the Fuel System* above, located within the core shroud. The core is designed to have a low hydraulic resistance which is optimal for natural circulation. The assemblies each have 92 fuel rods, with approximately 186 kilograms of uranium and consisting of 78 full-length rods, 14 partial-length rods, and two large central water rods. The fuel itself is comprised of uranium dioxide (UO_2) pellets with an average bundle enrichment between 3.84 and 4.68 percent uranium-235. A select number of these pellets contain gadolinium as a burnable neutron absorber.

The BWRX-300 core also contains 57 control rods and associated nuclear instrumentation. The flow of coolant is upward from the base of the Reactor Pressure Vessel (RPV) through to the top where it is allowed to boil into steam. The approximate coolant inlet and outlet temperatures are 270 and 288 ^{o}C respectively, with an absolute operating pressure of 7.2 mega-Pascals (MPa). Demineralised light water is used as a material for both the moderator and reactor coolant systems.

The principal computer codes used in steady-state core analyses are the three-dimensional coupled nuclear-thermal-hydraulic code “PANAC11,” and the two-dimensional lattice physics code “TGBLA06,” both of which are widely used throughout the operating BWR reactors worldwide. Individual isotope cross-sectional data developed for use by these codes are based on ENDF/B (Version V) library data, an industry standard isotopic dataset.

CNSC staff’s review of the GESTAR II licensing acceptance criteria identified that the following coefficients of reactivity remain negative throughout the life of the core, for all operating conditions: the Doppler coefficient, the void coefficient, and the moderator temperature coefficient of reactivity. Thus, the power coefficient of reactivity[4] is also negative for all operating power levels above “hot standby[5]”

[4] The “power coefficient of reactivity” is defined as the sum of the moderator temperature coefficient of reactivity, the fuel temperature coefficient of reactivity, and the void coefficient of reactivity. It is often expressed as the change in reactivity per percentage change in reactor power.

[5] “Zero-power hot” or “hot standby” refers to core conditions where the coolant pressures and temperatures are at nominal values (7.2 MPa and 260 degrees Celsius, respectively), but the reactor is not producing electric output.

conditions. A negative void coefficient of reactivity is considered to be an inherent safety feature of the BWRX-300 reactor.

CNSC staff note that the power coefficient of reactivity and moderator temperature coefficient of reactivity may have a positive value below "hot standby" conditions (i.e., when the coolant reaches operating pressures and 260 ^{o}C, the approximate temperature at which boiling begins). Subsection 8.1 of REGDOC-2.5.2 requires that, in the case where a reactor design has a positive power coefficient of reactivity for any operating state, the design authority demonstrate that the operation is acceptable for reactor control, stability, and overall plant safety. OPG has committed to meeting this requirement and has committed to providing further detailed information for review and acceptance as the design progresses.

OPG stated in their application that design features "prevent the loss of stability margin for upset events," and that, due primarily to a large negative moderator void feedback effect, there are no observed xenon-induced instabilities in operating BWRs. Further, the reactivity effects due to xenon are accounted in analyses of shutdown margins. OPG also indicated that transient xenon reactivity effects will be accounted for during load-following operations. CNSC staff note that additional information describing the results of transient and stability analyses, including potential effects from xenon and neptunium, at different operational states should be provided as the design progresses. OPG has committed to providing further detailed information for review and acceptance as the design progresses.

CNSC staff also note that the BWRX-300 design does not include a means for "stability detection and an associated trip system." OPG will be required to confirm that a special stability detection and associated trip system will not be required for operations, prior to the removal of the first proposed regulatory hold point. OPG has committed to providing further detailed information for review and acceptance as the design progresses.

A.2.5.4.5 Core Thermal-Hydraulic Design

Subsection 8.1.1 of REGDOC-2.5.2 explains that the core thermal-hydraulic design should ensure that a sufficient margin exists to maintain adequate heat transfer from the fuel to the reactor coolant to prevent overheating of the fuel cladding.

The thermal-hydraulic design of the BWRX-300 is based on the Economic Simplified BWR (ESBWR), a 1520 MWe reactor design currently certified by the USNRC. While the ESBWR has never been built, it did have a significant testing and qualification program that is mostly applicable to the BWRX-300. During normal operation, core cooling is achieved based on natural circulation, supported by the extended height of the RPV and the "chimney" space located above the reactor core.

The BWRX-300 has several novel features compared that are intended to simplify the design, and that have a consequential impact on the general thermal-hydraulic and core design. Some of these features include the use of Reactor Isolation Valves

(RIV) to rapidly isolate a ruptured pipe, the elimination of safety relief valves, and the use of the Isolation Condenser System (ICS) to provide overpressure protection and passive core cooling during transients and postulated accident events.

The ICS is intended to remove decay heat after any reactor isolation and shutdown event during at-power operations. This will limit any increases in steam pressure and maintain the RPV pressure and inventory at an acceptable level, ensuring the reactor core remains covered during accident conditions. This system consists of three independent loops that each contain a heat exchanger capable of removing approximately 33 MW of heat. CNSC staff's detailed discussion of the functionality of the ICS is described in subsection A.2.5.5.2 – *The Isolation Condenser System as a System Supporting the Emergency Core Cooling Function* .

A function of the core thermal-hydraulic design is to establish thermal-hydraulic operating limits to be used to assure a sufficient thermal safety margin, in accordance with REGDOC-2.5.2. Subsections 4.4.8 and 4.8 of the PSAR [R2.4-1] describe the core thermal-hydraulic stability performance requirements, and the methodologies used to analyse BWRX-300 thermal-hydraulic stability are described in the Transient Reactor Analysis Code "GE Hitachi" (TRACG) computer code.

The design should assure acceptable margins for Specified Acceptable Fuel Design Limits (SAFDL), which are described using the following defined values for the core:

- Critical Power Ratio (CPR), a value used to calculate the thermal limits of BWRs and defined as the margin between the operating and dry-out conditions of the reactor coolant.
- Operating Limit Minimum Critical Power Ratio (OLMCPR), which is a safety parameter indicating the margin of the fuel assembly closest to dry-out. It is the minimum value of the CPR that will prevent dry-out conditions during normal operations of BWRs, as well as for the most-limiting transients.
- Maximum Linear Heat Generation Rate (MLHGR), which is the maximum heat per unit length of fuel rod with the highest surface heat flux at a given point in the bundle.

A key design objective for normal operations and AOOs is to maintain nucleate boiling conditions, and to avoid transitioning to boiling conditions along the fuel assemblies. The CPR is an important safety indicator that is defined as the ratio of the bundle power where at least one point within the fuel assembly experiences the onset of boiling transition, to the overall operating bundle power. A calculated CPR of 1.0 corresponds to the best-estimate value for the onset of boiling transition, as determined by the specific GEXL17 correlation for the GNF2 fuel assemblies implemented in the BWRX-300.

Additional requirements for the core thermal-hydraulic design are the Fuel Cladding Integrity Safety Limit (FCISL), the $MCPR_{99.9\%}$, and the Delta-CPR over the initial CPR (ΔCPR/ICPR). The ratio of the change in CPR to the initial CPR is an important parameter in assessing and addressing transient behaviour margins in the core.

The void fraction distribution in the core also has an important role in the thermal-hydraulic design because of its strong influence on neutron flux and power. An accurate prediction of the void can be calculated based on experimental data for flow geometry through the core and two-phase flow thermal-hydraulics. Similarly, accurate estimates and calculations of pressure drop distribution along fuel assemblies, as well as the bypass flow areas calculated for predicting the steady-state, MCPR, and void distributions are critical parameters in core thermal-hydraulic design.

The thermal-hydraulic design methodology for the BWRX-300 is based on several computer codes, including the "TRACG" computer code that has a substantial contribution to the demonstration of the safety of the design. These computer codes must be compliant with the requirements of REGDOC-2.4.1, REGDOC-2.5.2, as well as CSA standard N286.7 – *Quality Assurance of Analytical, Scientific, and Design Computer Programs* [R2.4-36].

Further core thermal-hydraulic design information and methodologies are based on a qualification to ASME standard NQA-1, considered equivalent to CSA N286.7. The methodologies used in the determination of the safety parameters mentioned above require specific computer codes—for example, OLMCPR assessments use the TRACG proprietary computer code. The MLHGR methodology provides margin to design circumferential cladding strain, and the centreline fuel temperature is evaluated for AOOs in accordance with the TRACG computer code.

Similarly, the TRACG code is used to determine the void fraction distribution, the core pressure drop, and the hydraulic load, all of which are documented in the *TRACG Application for BWRX-300* document [R2.4-37]. CNSC staff's review of the supplied documentation regarding the validation and qualification of thermal-hydraulic computer codes is described in subsection A.1.3.4.1 – *Transient Reactor Analysis Code "GE Hitachi" (TRACG)* above.

A core thermal-hydraulic assessment requires the inclusion of nuclear parameters along with thermal-hydraulic parameters in an iterative process that considers variations in both sets of parameters. CNSC staff note the analytical methods used in the analysis of the BWRX-300 core are the Global Nuclear Fuels standard codes used throughout the industry. The behaviour of the core for postulated AOOs and accident scenarios are explicitly modelled in the TRACG code, by employing three-dimensional reactor kinetics models consistent with the approach used in the BWR computer code PANAC11. A description of the response of the core during abnormal operating conditions is provided in Chapter 15 of the PSAR.

A.2.5.4.6 Reactor Materials

As outlined in REGDOC-1.1.2 and REGDOC-2.5.2, an application for a licence to construct should describe the materials used for the components of the reactor, such as materials used for the reactor coolant system pressure boundary, and the materials for in-core components such as instrumentation and reactivity control mechanisms. The application should also include information on the material specifications including their physical, chemical, and mechanical properties, their resistance to corrosion, their dimensional stability and strength, resistance to crack formation, and if necessary, their microstructure and fabrication information.

Subsection 5.2 of the PSAR [R2.4-1] provides a summary of the material requirements associated with the BWRX-300 Nuclear Boiler System (NBS), as well as those associated with the reactor coolant pressure boundary (RCPB).

OPG has defined the material and process control requirements for BWRX-300 components to ensure the reliability of plant operations throughout its design life. This can be achieved by implementing measures to minimise the irradiation of plant components and corrosion products where possible, and minimising conditions amenable to the degradation of materials—specifically from intergranular stress corrosion cracking, general corrosion, and flow-accelerated corrosion mechanisms. Implementation of proper material chemistry controls, heat treatment, contamination controls, and material process controls are examples of measures that can minimise degradation of materials.

The NBS uses well-proven BWR materials and processes that have been refined to meet BWRX-300 design-specific requirements. The basic design principle for material selection is to select materials that can maintain reliable operation of plant systems and components throughout the design life of those systems or components. Carbon steels, atmospheric corrosion-resistant carbon steels, and low-alloy steels are used as basic materials. To minimise the potential for corrosion product formation and the consequential radiation fields from corrosion product transport, austenitic[6] stainless steels are used.

Stress corrosion cracking mechanisms are the dominant form of corrosion in a BWR and is the subject of significant research and mitigation efforts throughout the industry. It is a complex phenomenon involving mechanical, electro-chemical, and metallurgical factors, and is characterised by the localisation of a cracked region near welds or near regions of high surface stresses or strains. Stress corrosion cracking occurs with stainless steels placed in a corrosive environment and under constant tensile stress. The elimination of these stresses, and reduction of the corrosive environment, mitigates the risk of stress corrosion cracking of stainless-steel components.

[6] "Austenitic" stainless steels refer to the class of stainless steels with the *austenite* crystalline structure, with composition of austenite-stabilising elements such as nickel, nitrogen, or manganese. These steels are not hardenable by heat treatment and have high corrosion resistance.

All pressure boundary material specifications for the BWRX-300 are defined in the PSAR as ASME or the American Society for Testing and Materials (ASTM) standards. The PSAR also provides a discussion of other degradation mechanisms that have the potential to affect the integrity of materials used in the BWRX-300 reactor.

CNSC staff reviewed the material specifications and process controls provided in the PSAR and its various supporting documents and have determined that the regulatory expectations in REGDOC-1.1.2 and REGDOC-2.5.2 have been met.

A.2.5.4.7 Design of the Reactor Coolant and Reactor Auxiliary Systems

As outlined in REGDOC-1.1.2 and REGDOC-2.5.2, an application for a licence to construct should also provide the design basis requirements for the reactor coolant system and its major components (e.g., reactor coolant pumps, system piping, steam line isolation system, etc.). The system design performance and features to ensure that its various components and interfacing subsystems, should be described to ensure that they meet the safety requirements for design.

The BWRX-300 is designed to operate in a direct thermodynamic cycle, directly connecting steam generation in the reactor to the turbine. Similar to operating BWRs, the reactor coolant water has a dual function, acting as a coolant and working fluid that drives the turbine, with the exception that the BWRX-300 does not require a recirculation pump and associated piping. The BWRX-300 differs from current BWRs as it is designed to cool the reactor fuel by means of natural circulation. In order to achieve sufficient coolant flow the BWRX-300 has a tall reactor vessel, and includes a tall chimney between the top of the reactor core and the bottom of the steam separator assembly located in the upper part of the Reactor Pressure Vessel (RPV).

Chapter 5 of the PSAR provides a description of the Reactor Coolant System (RCS). Subsection A.2.5.4.1 – *The Reactor Pressure Vessel (RPV)* and Figure A-6 above provides an illustration of the internals of the BWRX-300 RPV.

The RCS is defined as the system necessary to provide and maintain adequate core cooling conditions (i.e., coolant pressure, temperature, and flow rate) for the fuel during power operation. The system includes the RPV, the main steam lines (MSL), as well as feedwater lines up to and including the outermost Containment Isolation Valves (CIV).

The Reactor Coolant Pressure Boundary (RCPB) is fundamental to the safe operation of the plant throughout all operating states, including normal operations and postulated accident scenarios. The design of the BWRX-300 addresses the functional and structural integrity aspect of various RCS SSCs, with strict requirements for the robustness, quality, independence, redundancy, and diversity to maintain adequate cooling capacity throughout all operational states and postulated accident conditions. The RCS, along with the NBS and the RCPB, are fundamental elements of the defence in depth safety strategy to meet the

requirements of REGDOC-2.5.2 (see subsection A.2.2.5 – *Defence in Depth* above for a description of the defence in depth approach).

The RCS is comprised of three primary subsystems: the RPV, the Main Steam System, and the corresponding instrumentation. The Isolation Condenser System (ICS), the Reactor Isolation Valves (RIV) and Instrumentation and Control (I&C) are important subsystems that also form part of the RCS. The RIVs have an interface with several other subsystems, including the Main Steam System, RPV Head Vent, ICS Supply, ICS Return, Condensate and Feedwater (CFS) Heating, and the Reactor Water Cleanup System (CUW). These systems are designed in accordance with the requirements of the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (BPVC) and the ASMR BPVS-III NCD.

The RCS and NBS implement inherent margins (e.g., a larger inventory of water) to eliminate system challenges and reduce the number and size of RPV nozzles, as compared to predecessor BWR designs. Notably, all RPV nozzles are located above the "top of active fuel" region. The relatively large RPV volume, along with the height of the chimney region, provides a substantial reservoir of water above the core, ensuring that the coolant level is maintained above the top of the fuel and consequently that fuel cladding temperatures are maintained within acceptable operating temperature range following transients involving interruption of feedwater flow or loss-of-coolant accidents (LOCA). These features are intended to preserve the reactor coolant inventory to ensure that adequate core cooling is maintained.

As described above, the chimney is a feature unique to natural circulation BWRs and is used to extend the area of the RPV above the core, and below the steam separators, to increase the thermal driving head for natural circulation and thereby drive a larger core flow. OPEX with chimneys in natural circulation BWRs has been gained from several operating reactors such as the Vallecitos BWR, Humboldt Bay, and Dodewaard. Previous natural circulation BWRs used chimneys with distinct flow partitions, whereas with the BWRX-300 chimney design, these partitions are removed to simplify construction and eliminate the requirement to remove the chimney during refuelling outages and shortening the overall outage schedule.

The RCS is also connected to several auxiliary systems, including the Chemical and Inventory Control System (CIC) for the reactor coolant, the CUW, the Control Rod Drive (CRD) purge flow system, and vents provided for the NBS and the CRD systems.

The PSAR also provides an additional description of the materials used in the RCS, with the evaluations of potential structural failure mechanisms, as well as information about the maintenance and inspection requirements for these structures.

CNSC staff have reviewed of OPG's application and supporting documentation and has determined that the information is sufficient to support a recommendation for the Commission to issue a licence to construct, as related to the general design expectations of the reactor coolant system identified in REGDOC-2.5.2. CNSC staff have also identified some areas where OPG is required to provide additional detailed information to demonstrate REGDOC-2.5.2 expectations have been met. Subsection A.2.2.6.2 – *Pressure Boundary Quality Group* above provides an overview of some of these areas.

A.2.5.4.8 Overpressure Protection

Protection of components and systems from overpressure conditions and consequential failure is an essential design requirement for pressure-retaining systems or components (PRSC). Subsection 7.7, *Pressure-Retaining Structures, Systems, and Components*, of REGDOC-2.5.2 outlines expectations that all PRSCs be designed to prevent overpressure conditions in accordance with established standards.

The overpressure protection design concept for the BWRX-300 RCPB is based on the use of the Isolation Condenser System (ICS) which also provides for reactor shutoff, and fuel cooling functionality. OPG's application states that the large capacity of the ICS is sufficient to provide overpressure protection and maintain the RPV pressure within a nominal acceptable range, in accordance with ASME *Boiler and Pressure Vessel Code* Section III Class 1 equipment.

The BWRX-300 reactor does not implement PRVs, but rather implements an ultimate pressure regulation (UPR) device on each ICS line that provides a DL4b function and is intended to operate in the event of a failure of all ICS trains. OPG states that the UPR device effectively eliminates the potential for a loss of coolant accident (LOCA) resulting from a PRV failure.

OPG has stated that the Isolation Condenser System will be designed for all relevant loads. This will then ensure that it can provide the overpressure protection function without compromising the BWRX-300 pressure boundary in the event of system actuation. Subsection A.2.5.5.2 – *The Isolation Condenser System as a System Supporting the Emergency Core Cooling Function* provides a further discussion and description of the ICS function. OPG has committed to provide further detailed information about the ICS overpressure protection function, including testing reports. OPG has also committed to providing detailed analysis of the ICS system in a piping design report to demonstrate that allowable limits are not exceeded.

A.2.5.4.9 Break Exclusion Zone

The Break Exclusion Zone (BEZ) is a methodology for assessment of pipe breaks in a RCPB without having to explicitly evaluate dynamic effects of postulated breaks in high-energy lines (HEL)—i.e., consequences such as pipe whip, jet impingement, blast effects—and their effects on neighbouring systems and

equipment important to safety. The BEZ methodology is also used as a methodology to justify limited implementation of physical preventative and mitigation measures to protect against dynamic HEL break effects —such as pipe whip restraints, guards, barriers, and shielding. Methodologies for implementation of the BEZ concept are outlined in USNRC Branch Technical Position document NUREG-0800/BTP 3-4 – *Postulated Rupture Locations in Fluid System Piping Inside and Outside Containment (Revision 2)* [R2.5-42].

The BEZ concept has been applied to limited sections of HEL piping near containment penetrations in a number of US nuclear power plants, and typically where it is impossible to perform in-service inspections to verify piping conditions due to access restrictions or high radiation fields.

Additionally, the Pipe Whip Jet Impingement Assessment (PWJIA) and a Leak-before-Break (LBB) assessments have been used in the Canadian industry to evaluate the need for physical barriers and to provide a potential justification for their removal, consistent with the defence in depth, internal hazards, and protection against postulated pipe break concepts outlined throughout REGDOC-2.5.2.

OPG has proposed the application of USNRC guidance on the BEZ for such postulated pipe failures. CNSC staff note that the BEZ concept is not addressed in the Canadian nuclear regulatory framework and is not a standard practice in the Canadian nuclear industry. The standard practice in the industry is to assume a postulated break at each weld in HELs. Specifically, neither REGDOC-2.5.2 nor CSA N285.0 provide guidance for the use of this methodology, and therefore CNSC staff are reviewing OPG's proposal as an alternative approach to meeting regulatory requirements.

OPG is proposing to use the BEZ approach with the BWRX-300 on a larger scale than previously implemented in operating BWRs and Pressurized Water Reactors (PWRs). OPG's proposal includes applying BEZ principles to include all HEL inside the reactor building, consisting of a total of approximately 300 metres of piping, significantly more than the current implementation in operating BWRs and PWRs.

Stainless steel, a material resistant to wall thinning but vulnerable to stress corrosion cracking (SCC), will be implemented to construct specific HELs within the BWRX-300 RCPB.

CNSC staff's review of OPG's proposal determined that OPG has not adequately demonstrated the effectiveness of the stress and cumulative usage factor-based screening processes to anticipate crack initiation and growth under the BEZ concept. This includes ensuring that the non-destructive examination (NDE) tool meets Canadian qualification processes so that it can accurately detect defects in stainless steels. OPG has committed to providing additional information to respond to CNSC concerns regarding the BEZ concept.

A.2.5.5 Safety Systems and Safety Support Systems

Subsection 4.5.9, *Safety Systems and Safety Support Systems*, of REGOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility (version 2)* states that the application for a licence to construct should demonstrate that the safety systems are sufficient to ensure the safe shutdown of the reactor, the residual heat removal from the core, or limit the consequences of AOOs and DBAs. The application should also demonstrate how the safety support system(s) support the operation of one or more safety systems.

The following subsections provide an overview of, and provide CNSC staff's review and assessment of, the safety and safety support systems of the BWRX-300 reactor.

A.2.5.5.1 Means of Shutdown

Ensuring adequate means of shutdown is integral to nuclear safety. An application for a licence to construct should describe the means of reactor shutdown, means of reducing the reactor power to a low value, and of maintaining that low power for the required duration when the reactor power control system and inherent characteristics are insufficient or incapable of maintaining reactor power within the safe operating envelope.

Subsection 8.4, *Means of Shutdown*, of REGDOC-2.5.2 outlines expectations for the design of a shutdown system, including specifying provisions for separate, independent, and diverse means of shutting down the reactor. At least one of these means is expected to be independently capable of rendering the reactor subcritical from normal operation, by an adequate margin, assuming a single failure.

Chapters 4, *Reactor*, and 7, *Instrumentation and Control*, of the PSAR describe the design of the BWRX-300 means of shutdown. The reactor shutdown function is fulfilled by a reactivity control system that serves the combined function of (1) controlling reactivity (i.e., controlling the reactor power), and (2) shutting down the reactor and maintaining the core subcritical. The reactivity control systems consist primarily of the Control Rods (CR) and the associated Control Rod Drive (CRD) system.

Fifty-seven (57) Control Rod assemblies are distributed throughout the core that can be inserted and withdrawn within guide tubes that are embedded in the space between four neighbouring fuel rod assemblies (refer to Figure A-7 for a diagram of the fuel assembly and the location of the CRs).

The CRD system provides the means of inserting and withdrawing the CR assemblies, by providing two diverse motive forces for CR movement: high-pressure water hydraulic drives, and electric motor drives. Subsection A.2.5.4.3 – *Design of Reactivity Control Systems* provides a description of the CRs.

For events that demand a rapid shutdown of the reactor, CRs are inserted rapidly using stored high-pressure water hydraulic means (referred to as a "hydraulic

SCRAM" or "hydraulic trip"). In the event the hydraulic trip has failed, electric motors are signaled to run-in the CRs at a fast speed (referred to as "fast motor run-in") as a backup system.

OPG has stated that the BWRX-300 design provides two independent means of shutdown—i.e., the hydraulic drive-in and the fast motor run-in of the CRs—and the design therefore meets the two independent means shutdown expectations of REGDOC-2.5.2. CNSC staff reviewed the design information provided in the PSAR and in subsequent submissions to support OPG's claims for independence of the means of shutdown, and determined there is adequate separation and independence for the *ex*-core components, including the sensors for shutdown need, motive force, and CR actuation. CNSC staff do not consider these means truly independent since they share the only credited negative reactivity insertion devices.

OPG has provided CNSC staff with supplemental submissions, providing a technical rationale to demonstrate the means of shutdown implemented with the BWRX-300 design constitutes an acceptable "alternative approach," as provided for in section 11 of REGDOC-2.5.2. OPG states that the BWRX-300, along with its complementary design features, can cope with events with coincident complete control rod failures. OPG has committed to provide, upon completion of the design process, the final beyond design-basis accident (BDBA) analysis results for the failure-to-insert of all control rods, as well as the reliability analysis results for the means of shutdown function to further validate OPG's statements.

CNSC staff will conduct a detailed review of the supplemental information, the safety analyses presented in the PSAR, and the commitment to provide the BDBA and reliability analyses, to verify that events with a complete failure-to-insert of all control rods will not lead to unacceptable consequences. Should OPG be unable to demonstrate that its means of shutdown meets the nuclear safety expectations in REGDOC-2.5.2, OPG will be required to propose additional design provisions to meet CNSC regulatory expectations.

A.2.5.5.2 The Isolation Condenser System as a System Supporting the Emergency Core Cooling Function

REGDOC-1.1.2 states that an application for a licence to construct should describe the systems and components supporting emergency heat removal, provide a demonstration that the safety of the reactor would not be affected if all or part of the emergency core cooling system was inadvertently operated, and demonstrate that these systems provide residual heat removal to meet fuel design and pressure boundary condition limits in accordance with subsection 8.5 of REGDOC-2.5.2.

Chapter 6, *Engineered Safety Features*, of the PSAR [R2.4-1] describes the features of the BWRX-300 that are intended to mitigate the consequences of AOOs or postulated DBAs without leading to core damage.

A.2.5.5.2.1 Description of the Isolation Condenser System

OPG states that the BWRX-300 design includes several features that simplify the design and enhance the overall safety of the plant. In particular, the BWRX-300 design employs the use of the passive Isolation Condenser System (ICS) to perform the emergency core cooling (ECC) safety function.

Subsection 6.2.1, *Isolation Condenser System: General Description*, of the PSAR states that the ICS is designed a DL3, Safety Class 1, system that removes decay heat following a reactor isolation and shutdown event when the main condenser is not available. The PSAR states that there is no requirement for forced circulation equipment when the ICS is in-service following either a reactor isolation at power, a loss of alternating current, a failure to trip event, or in the event of a LOCA.

The ICS consists of three independent, redundant, loops each connected to the RPV by steam supply and condensate return piping. Each loop contains an ICS pool, a 33 MW capacity heat exchanger, and associated connections to the RPV. The ICS pools are located outside of containment. Figure A-9 below shows the approximate layout of the ICS system in relation to the RPV within the BWRX-300 reactor building.

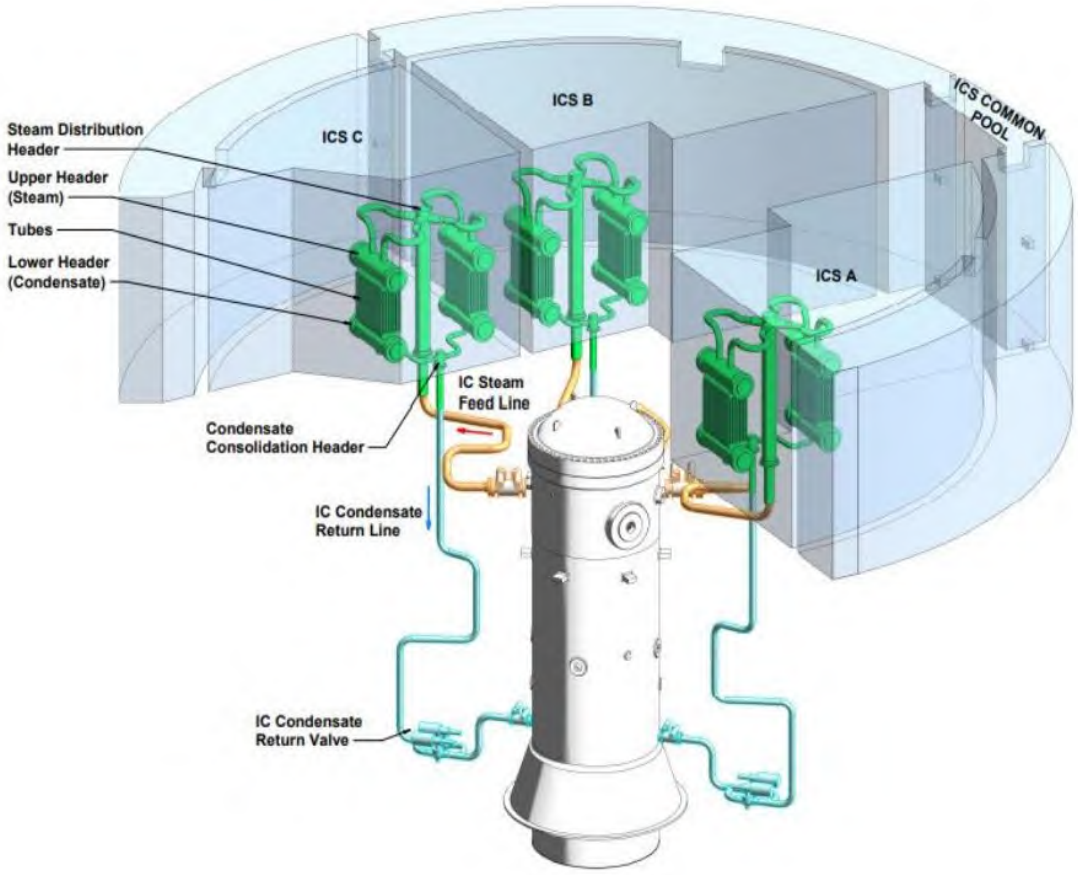
During normal operating conditions, the ICS is in standby and is available to perform the intended safety function, by ensuring that the following conditions are met:

- Isolation Condensers and Condensate Return Lines are filled with water to the level of the steam distribution headers,
- Condensate Return Valves are closed, operable, and ready to open when ICS is initiated on-demand from interfacing DL2, DL3, and DL4a control systems.

Check valves are installed on each ICS line and prevent backflow from each inner and outer pool, intended to preserve minimum inventory requirements for the DL2, DL3, and DL4a decay heat removal functions.

In any of the reactor shutdown states, the ICS is intended to provide a suction path from the internal chimney region to the Shutdown Cooling system (SDC) to provide for the DL2 decay heat removal function. When SDC is not operating, the interfacing valves between SDC and the ICS are isolated to maintain the integrity of the reactor coolant pressure boundary.

Figure A-9: The Layout of the Isolation Condenser System in the BWRX-300 Reactor Building (Source: GE Hitachi)



The ICS also provides essential functions in response to Anticipated Operational Occurrences (AOO) or Design-Basis Accident (DBA) events. In response to either of these events, the ICS is intended to confine radioactive materials, maintain fuel cooling, and provide long-term heat removal, in response to any of the following initiating events:

- Provide overpressure protection, in conjunction with a hydraulic trip, for overpressure scenarios that progress to DL3 conditions (i.e., RPV operating pressure setpoints exceeded, or RPV high pressure setpoints exceeded).

- Provide coolant inventory addition and decay heat removal functions in response to: RPV coolant level below setpoint, high Containment pressure setpoint exceeded, or a link break detected in either main steam line, feedwater, or ICS lines.

The isolation condensers in each loop condense steam from the RPV and transfer heat to the bulk ICS pool water, which is allowed to boil, and any steam from the ICS pools is vented to atmosphere. The ICS is intended to provide an ultimate heat sink preserving the fuel cooling function during AOO or DBA events where the

main condenser is unavailable and the RPV has been isolated. The normal condition for the ICS is for the steam-side connection between the RPV and each isolation condenser to remain open, with the condensate return line normally closed. As steam is condensed, the condensate would nominally be returned to the RPV chimney through the condensate return pipe.

Upon an actuation signal, the ICS is placed into operation by opening the condensate return valves, where this subcooled water enters the RPV chimney and lowers the pressure at the reactor core exit. Steam from the RPV continues to enter the isolation condensers where the condensation cycle continues, and subcooled liquid is returned to the RPV in a continuous cycle.

Steam Supply, Condensate Return, and Standby Gas Purge Subsystems

The steam supply, condensate return, and standby gas purge piping are all designed to the ASME BPVC Section III specifications. As shown in Figure A-9, the steam supply and condensate return piping extend from the RIVs to their respective connection points in each isolation condenser components. The standby purge piping extends from the isolation condenser purge line connection point to the standby purge isolation valve.

Condensate return piping is placed from the isolation condenser connection point to the condensate return valves at the RPV chimney. The stored water volume in this piping during standby conditions is a critical parameter credited in safety analyses and form a critical parameter modelled in TRACG analyses for the ICS safety basis.

Each ICS loop has two remotely operated condensate return valves arranged in parallel, capable of handling full condensate return volumes, that are designed to fail-open upon a loss of control signal, power, or a loss of pneumatic supply. The valves are in a horizontal section of piping at the lowest elevation of the condensate return lines, creating a loop seal that ensures the valves have a continuous supply of subcooled water on either side of the seal in all operational states.

The loop seal is intended to maintain a volume of subcooled liquid in the condensate return line to prevent steam bypass conditions and lower heat removal performance, and in the standby condition, to ensure that the subcooled liquid is at the same temperature on both sides of the valve seats to prevent distortion and valve leakage.

In addition, radiolytic generation of hydrogen and oxygen occurs whenever the reactor is critical. In the standby condition, these radiolytic gases will accumulate in the upper point of the isolation condensers where there is an interface between the steam and subcooled liquids. To prevent a buildup of these gases a continuous gas purge is required, with the provided gas purge lines connected to the centre region of the steam distributors in the isolation condensers and routed into Containment. This purge line is routed to the main steam line in the interspatial region between

the RIV and Containment penetration. The gas purge flow is induced by the pressure drop between the RPV and the downstream locations of the RIV. These valves are normally open in the ICS standby condition, with at least one valve closed whenever the reactor is isolated and the ICS is operational. Each IC also has an integral autocatalytic recombiner that minimises concentrations of radiolytic gases during operation, which OPG states minimises the need to vent non-condensable gases.

Interface of the ICS with the Shutdown Cooling System

The two primary trains of the ICS each have two isolation valves outside of Containment, interfacing with SDC trains A and B, that collectively provide a suction path from the RPV chimney to the SDC system. Interface piping in the ICS is provided by a connection point in the loop seal region between the condensate return valves and the RIVs and is routed through Containment and through a set of remotely operated isolation valves. The interface point between the two systems is at the outlet point of the outermost isolation valve of each ICS loop. Subsection A.2.5.9.1.3 – *The Shutdown Cooling System (*SDC) provides an overview of the SDC system.

A.2.5.5.2.2 The Function of the Isolation Condenser System (ICS) as an Alternative to Emergency Core Cooling Systems (ECC)

OPG states that the proposed BWRX-300 design has simplified the design of systems and components that support the ECC safety function. The BWRX-300 design for mitigating loss-of-coolant accidents (LOCA) includes crediting conservative safety margins, designing for incorporation of larger water volumes by including a taller chimney region, and reducing the number and size of RPV penetrations as compared to previous BWR designs. The BWRX-300 also places its feedwater and ICS condensate return valves above the top of active fuel region.

The reactor isolation valves (RIV) also provide a critical function in response to a LOCA event, by acting in combination with the ICS in a LOCA event to preserve coolant inventory and ensure that adequate core cooling is maintained. The RIVs will close and isolate the reactor upon detection of a LOCA event, the hydraulic reactor trip function will shut the reactor down, and at least one condensate return valve in an ICS loop will open to provide make-up inventory to the reactor core.

In the PSAR, OPG states that due to the large inventory of water and the tall chimney region, the rate of pressurisation of the RPV is slower than the time needed for the RIVs and ICS system to actuate. In combination with the hydraulic reactor trip, the slower RPV pressurisation rate and actuation of the ICS means that relief and safety valves for pipe breaks are not required. The design of the ICS has matured to now include ultimate pressure regulation (UPR) devices on each of the three-isolation condenser steam supply lines, set to open and relieve accumulated steam pressure at different setpoints.

Subsection 15.2 of the PSAR describes the bounding scenarios for a LOCA event from pipe breaks as being either a large or small break inside or outside of containment. A large pipe break is assumed to be a break in a piping line with an inside diameter larger than 19 mm attached to the RPV, with the largest postulated breaks occurring in the main steam, feedwater, or ICS supply lines. Each of these lines have RIVs which are designed to close within 5 seconds following receipt of a close signal. Main steam pipes also have an integral flow limiter intended to prevent a very-large break prior to main steam RIV (MSRIV) closure. A leakage detection system is intended to detect breaks in all large pipes connected to the RPV.

For large break LOCAs, the RIVs are intended to close rapidly to prevent any significant loss of coolant inventory. The ICS is intended to actuate following RPV isolation, where the ICS pools have capacity to remove decay heat, depressurise the RPV and maintain the pressure within acceptable ranges, and maintain fuel cooling for a minimum of 72 hours.

Large steam pipe breaks are postulated to occur in either the main steam or ICS steam supply piping trains. For such breaks occurring inside of containment, a reactor trip is initiated on high containment pressure, whereas for such breaks occurring outside of containment, a reactor trip occurs on detection of a pipe break. The MSRIVs will close on either a high containment pressure signal or pipe break detection signal, and the ICS RIVs for the given train will close when an ICS break inside or outside containment is detected. OPG states that since these RIVs close rapidly there is little effect on the availability of any of the isolation condensers for postulated large breaks. Following RPV isolation, a single ICS train is credited to provide sufficient flow and inventory to remove decay heat and depressurise the RPV. Chapter 15.2 of the PSAR states that a single ICS train is therefore initiated on high containment pressure or on pipe breaks inside or outside of containment.

The ICS does not require external source of power or operator action to actuate. As described in subsection A.2.2.5 – *Defence in Depth* above, Defence Line (DL) 3 functions in the BWRX-300 design are passive to the extent practicable and are therefore significantly less-reliant on operator action or on supporting systems. In response to AOO or DBA events, the ICS acts to confine any potential releases of radioactive materials through maintaining overpressure protection functionality and maintaining the integrity of the RCPB. It also supports long-term fuel cooling and heat removal in these scenarios.

As documented in Chapter 3 of the PSAR, the ICS and its supporting systems are classified as Safety Classification (SC) 1 (refer to subsection A.2.2.6.1 – *Safety Classification* above), with some principal components classed as SC3. CNSC staff also note that the ICS is located partly within the Steel-Plate Composite Containment Vessel (SCCV) and within the Reactor Building (RB).

CNSC staff reviewed the information provided in the PSAR and supporting documentation and found that OPG will be required to provide additional

information to support some of the statements related to the reliability and RIV response times.

A.2.5.5.2.3 Effects on the Reactor Pressure Vessel upon Actuation of the Isolation Condenser System

As outlined in the PSAR, the relatively large volume in the chimney region of the RPV will provide a substantial reservoir of water above the reactor core, and this large volume will reduce the rate at which pressurisation of the reactor occurs, should the reactor core be suddenly isolated from its normal heat sink. A sudden opening of the ICS condensate return valve can lead to condensation of a large volume of steam, allowing pressure to be reduced in the RPV as intended. CNSC staff note this condensation also allows for the potential for steam hammer to be induced should the ICS system not adequately account for it in the design.

During CNSC staff's review of the PSAR, OPG was requested to demonstrate that fluid hammer is precluded when the ICS is activated to perform its overpressure protection function for the RCPB, so that the pressure boundary will not be breached. OPG indicated that the ICS is designed for all relevant loads, and that a detailed analysis, which considers fluid hammer, will be provided in a system piping design report that demonstrates allowable limits are not exceeded. CNSC staff will review OPG's submission to confirm that fluid hammer will not impact the safety of the reactor.

Additionally, BWRX-300 condensate return valves are nominally closed, operable and ready to open when the ICS is activated on an on-demand signal from any of the interfacing defence line (DL) 2, DL3, or DL4a control systems. CNSC staff requested OPG demonstrate the adequacy of the performance of the condensate return valves—i.e., by measuring flow, pressure drop across the valves, opening and closing times, system stability, and susceptibility to fluid hammer). OPG stated that further design details on these parameters will be provided as the design progresses. OPG will be required to provide further detailed design information demonstrating the design adequacy of the condensate return valves.

Capacity of the Isolation Condenser System to Provide Overpressure Protection

Through the ICS, the BWRX-300 reactor does not require additional systems to provide protection from overpressure conditions. Unlike traditional BWRs, the BWRX-300 does not discharge reactor coolant in response to a postulated pressure increase event—instead, condensed steam returns to the RPV by means of natural circulation.

For overpressure protection, traditional BWR designs discharge steam from the nuclear boiler system to a relatively lower-pressure containment environment while the BWRX-300 is designed to discharge steam from the upper portion to a slightly higher-pressure lower portion of the RPV.

CNSC staff requested OPG demonstrate that the relief capacity of the ICS is sufficient under all postulated accident scenarios by providing the overpressure protection testing results for the BWRX-300. CNSC staff will review the commissioning and test plan for the ICS as the information becomes available.

A.2.5.5.3 Systems and Components Supporting Emergency Heat Removal

As outlined in subsection 8.8, *Emergency Heat Removal System*, of REGDOC-2.5.2, an application for a licence to construct should describe the systems and components that support emergency heat removal to ensure safety under abnormal conditions.

The design shall include an emergency heat removal system that provides sufficient removal of residual heat to meet fuel design limits and maintain reactor coolant pressure boundary condition limits. The design should also include provisions to ensure its meets expectations outlined in CSA standard N290.11 – *Reactor Heat Removal Capability during Outages of Nuclear Power Plants* [R2.5-43].

The long-term heat removal during postulated emergency plant states for the BWRX-300 design includes specific SSCs discussed in subsection A.2.5.5.2 – *The Isolation Condenser System as a System Supporting the Emergency Core Cooling Function* above, as well as heat removal from the SCCV and heat removal through the ICS acting as the Ultimate Heat Sink when the normal heat sink is unavailable.

Emergency heat removal design for the BWRX-300 includes passive systems that employ natural circulation, rated for the full thermal output of the reactor (870 MW thermal).

Consistent with defence in depth principles outlined in REGDOC-2.5.2, the BWRX-300 is designed to demonstrate plant safety and ensure that both the dose and radiological acceptance criteria are met. OPG states that this objective is achieved by implementing passive design features and supported by a reduction in the number of active SSCs as compared to operating nuclear power plants.

The BWRX-300 also incorporates a Passive Containment Cooling System (PCCS), which is intended to remove any heat, de-pressurise, and maintain containment within its pressure limits for design-basis events such as a LOCA. Subsection A.2.5.5.4 – *Structures, Systems, and Components Supporting Containment and Confinement* provides an overview of SSCs supporting the containment function, including the PCCS.

The PCCS transfers heat from containment structures to the reactor cavity and equipment pools to maintain containment pressures and temperatures within design limits during accident conditions or during a loss of active containment cooling. The containment depressurisation and heat removal functions are passive and do not require on-site or off-site electric power for operation.

Chapter 15 of the PSAR [R2.4-1] provides an overview of post-accident energy removal capabilities using the PCCS. OPG presented an assessment methodology report, documented in OPG document NK054-REP-03555-00001 – *BWRX-300 Containment Evaluation Method* [R2.5-43], which was jointly reviewed by CNSC staff and the USNRC under the joint Memorandum of Cooperation. Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction* includes a commitment for OPG to provide further information to address topics discussed in this report.

CNSC staff note that further detailed analysis on the performance of the PCCS is required and will be submitted for review as the design progresses. The results of these detailed analyses will be provided as the information becomes available.

A.2.5.5.4 Structures, Systems, and Components Supporting Containment and Confinement

Subsection 4.5.9 of REGDOC-1.1.2 states that an application for a licence to construct should describe the SSCs that support containment and, where applicable, means of confinement, that are in place to minimise the release of radioactive materials to the environment during operations and during DBAs. The application should cover all operational states and accident conditions, in accordance with subsection 8.6, *Containment*, of REGDOC-2.5.2. Containment SSCs shall be classed as a safety system and be able to perform their safety functions and assist in mitigating the consequences of DBAs and DECs.

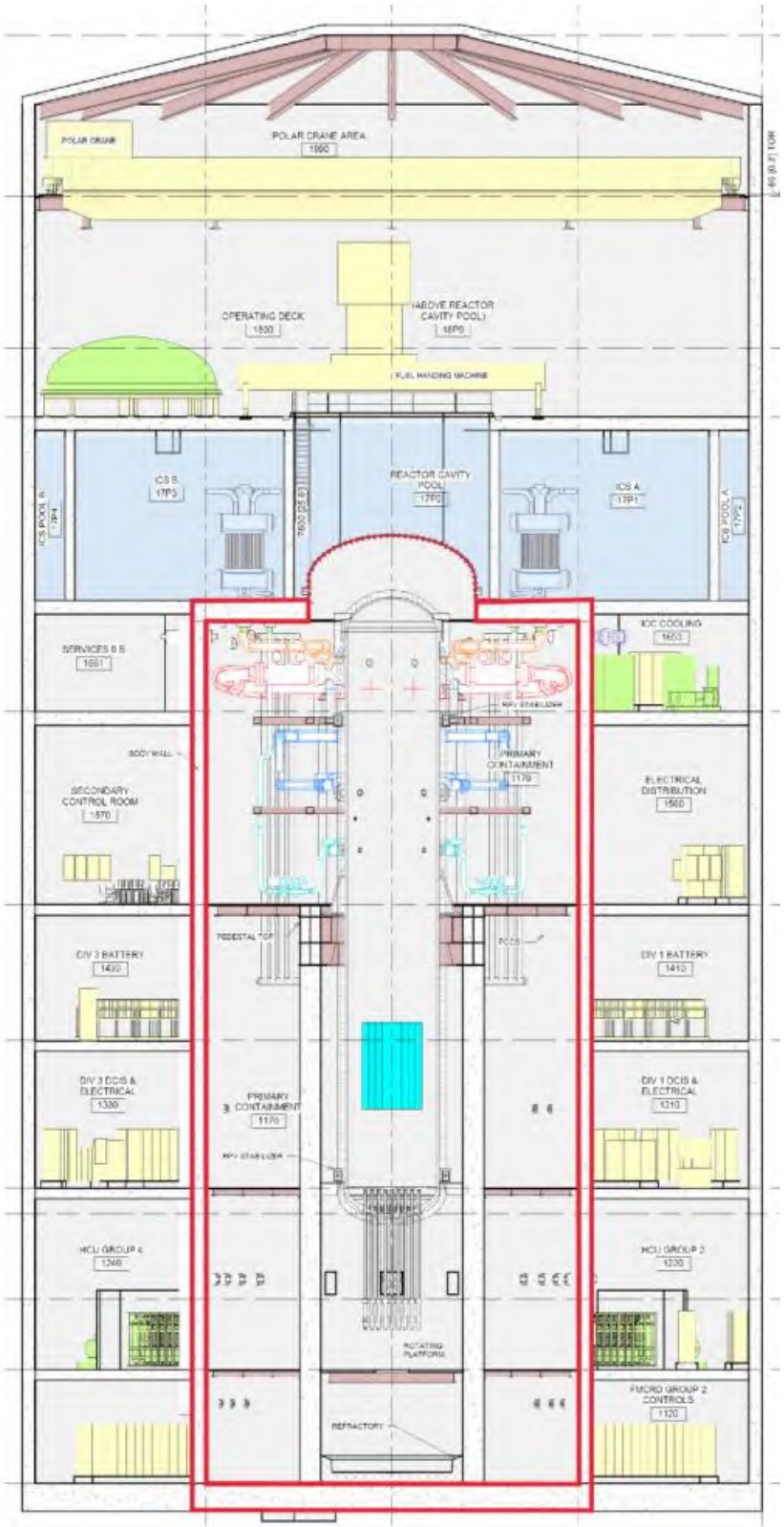
Subsection 6.3, *Containment and Associated Systems*, of the PSAR describes the SSCs that support containment and confinement functions.

The BWRX-300 Containment structure consists of the Primary Containment System (PCS), which is intended to form a leak-tight boundary encompassing the RPV, associated piping, and the Reactor Isolation Valves (RIV). It is intended to function as the fourth physical barrier to fission product release and can also be flooded in response to beyond design-basis accident (BDBA) scenarios.

The Containment structure is constructed using steel-plate concrete composite structures and is intended to operate with a dry, nitrogen-inerted atmosphere with active and passive cooling systems to dissipate normal and abnormal heat loads. It is embedded below-grade within the Seismic Category A Reactor Building and arranged such that it is below the pools for the ICS, reactor cavity, and equipment areas.

Figure A-10 below shows the general layout and arrangement of the PCS and associated structure within the BWRX-300 reactor building. In this Figure, the containment structure is highlighted with a double-lined red box. The ICS pools are also located just above the containment structure and surround the equipment pool and reactor cavity.

Figure A-10: General Layout of the Containment Structure within the BWRX-300 Reactor Building (Source: GE Hitachi)



The Containment structure itself is described as a Steel-Plate Composite Concrete Containment Vessel (SCCV) with cylindrical wall, basemat, top slab, and a containment closure head. It is integrated with the Reactor Building and supported by the shared Reactor Building foundation.

The containment closure head is a removable steel dome which covers the opening of the uppermost portion of the SCCV (i.e., above the RPV), and functions as a portion of the upper containment boundary. The closure head is removed during reactor refuelling and is placed in the equipment pool prior to replacement using the RB crane. The closure head forms part of the base of the reactor cavity pool and helps maintain water above the PCS during normal operation.

The PCS is designed to be operated as a passive system, with the Containment Inerting System providing an inert nitrogen environment slightly above atmospheric pressure, achieved during low-power operation. Detection of leaks in the PCS is accomplished by monitoring several parameters including the containment sump level and pump-out rate, air-handling unit drainage flow rates, and fission product monitoring in the containment atmosphere. Containment pressure and temperature readings are continuously monitored with alert indications provided at defined setpoints.

The reactor cavity is intended to be used as a heat sink for long-term cooling in abnormal or design-basis accident conditions if the normal Containment Cooling System coolers are unavailable (see subsection A.2.5.5.4.1 – *The Containment Cooling System (CCS)* below). Heat transfer from containment occurs passively by means of natural convection and condensation to the subcooled water in the equipment pool.

A.2.5.5.4.1 The Containment Cooling System (CCS)

Subsection 9A.5.6 of the PSAR provides an overview of the intended function of the Containment Cooling System (CCS). The CCS is a DL2, Safety Class 3, closed-loop system intended to recirculate the atmosphere in the PCS to remove heat, with no outside air introduced into the system. The CCS is also used to ensure containment conditions are maintained, including maintaining temperatures within specified limits for environmentally qualified Safety-Category function equipment.

The CCS provides cooling using four (4) fifty-percent duty air-handling units that reject heat to the Chilled Water Equipment system during all plant operational states (see subsection A.2.5.9.1.4 – *Chilled Water Equipment (CWE) System*). The air-handling units are divided into two trains, each cooled by a corresponding chilled water train so that containment can be cooled with a failure of either a CWE or CCS train. Each air-handling unit can also be provided electrical power from one of the Standby Diesel Generators to ensure the CCS can maintain its safety function during a loss of on-site power.

During normal operation, a single CCS train is operating with the other placed in the standby condition to ensure that environmentally qualified equipment in

containment can carry out their required safety function. The standby train automatically operates if the containment temperature reaches the upper setpoint limit or should the primary train trip. Condensate from each air-handling unit is collected and drained to a location outside of containment, and piped to the floor drain sump where it is discharged through the Equipment and Floor Drain system.

During abnormal operations, including during a loss-of-offsite power, the CCS air-handling units and supporting equipment remain functional, with electrical power provided by the Standby Diesel Generators. The CCS also helps cool containment following a loss-of-offsite-power event when the plant transitions from hot to cold shutdown states.

A.2.5.5.4.2 The Passive Containment Cooling System (PCCS)

Subsection 6.3.3 of the PSAR provides a description of the Passive Containment Cooling System (PCCS). The PCCS is intended to augment the primary CCS and maintain pressure and temperature of the PCS during abnormal conditions, where the CCS fan coolers are unavailable. The PCCS transfers heat to the equipment pool above containment by means of natural convection and thermosyphon principles, through three independent trains of PCCS piping. Figure A-11 below shows a representation of the PCCS piping, shown in purple colouring, in relation to the RPV and its connections to the equipment pool.

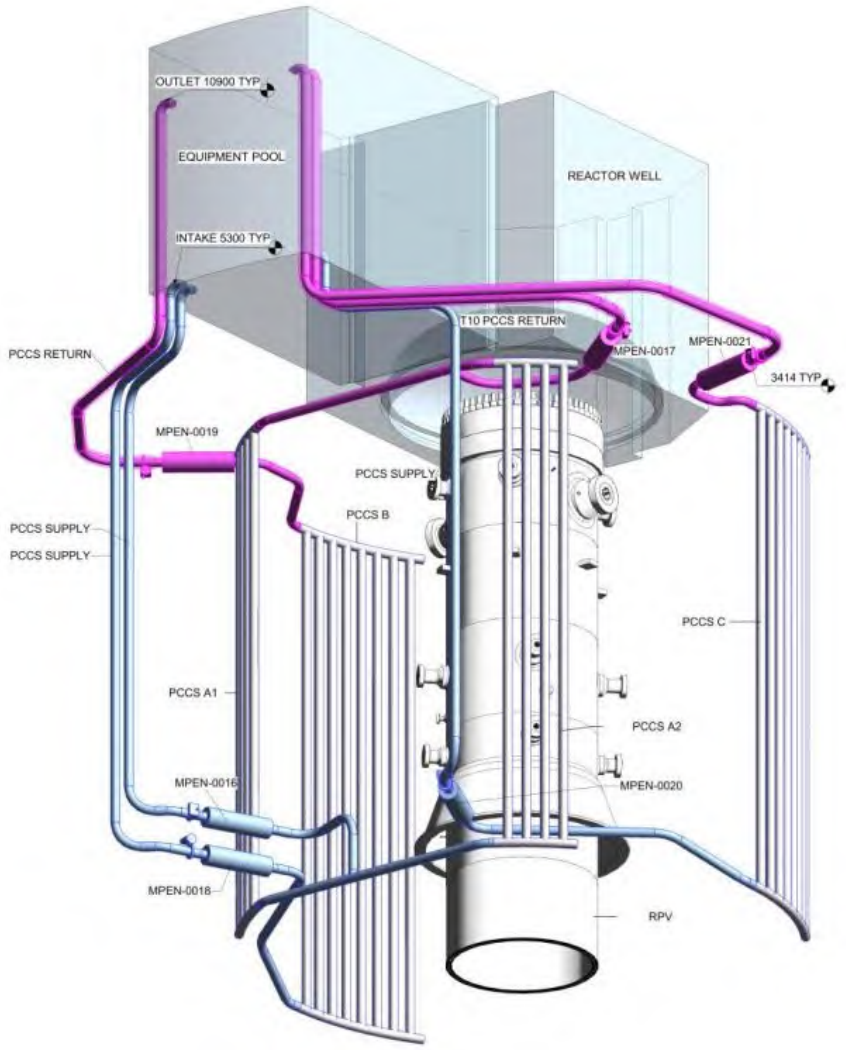
Each PCCS piping train contains a further eight connected pipes, arranged in a top and bottom header configuration, with in-line isolation valves placed on both the supply and return headers that can manually isolate a PCCS train in the event of a pipe leak or for maintenance. These isolation valves are normally open and are remotely operated. The PCCS piping outside of the containment boundary is open to the equipment pool.

The PCCS is always in-service and requires no signals or operator action to actuate. Heat removal from containment during normal operation is provided by the CCS through the active cooling fans of that system.

Heat removal from containment through the PCCS occurs when steam is discharged into containment following a design-basis event such as a pipe break, and condensation heat transfer from containment to the PCCS rejects the heat to the subcooled liquid in the reactor cavity and equipment pool. Much of the heat in a LOCA event is removed from the RPV through the ICS, and the PCCS is only required to remove the heat discharged into the containment.

In the PSAR, OPG states that the amount of heat discharged into containment following a large pipe break is minimal, since the RIVs can rapidly isolate the RPV. Additionally, the ICS is intended to quickly de-pressurise the RPV and therefore the amount of heat is also minimal, further reducing the heat load transferred into containment. Therefore, the PCCS is sized with sufficient capacity to reduce pressure and temperature in containment below design limits and minimise leakage following an accident.

Figure A-11: The Passive Containment Cooling System (Source: GE Hitachi)



A.2.5.5.4.3 Containment Isolation

Containment Isolation Valves (CIV) are safety-classified valves that prevent uncontrolled releases of containment content in the event of an accident or other postulated conditions, by maintaining the integrity of the containment boundary. Piping systems that penetrate primary containment structures are provided with detection, isolation, and containment functions that are reliable and redundant. The CIVs are periodically tested to validate their operability and determine whether leakage from these valves is within acceptable limits.

Containment isolation is required to maintain the integrity of the containment structure and act as a physical barrier to protect against the uncontrolled release of radioactive materials from containment to the environment because of an accident. Several systems are located inside of containment that have in-line RIVs, and OPG's safety analysis assumes that the RIVs quickly isolate any large pipe break, preserving reactor coolant and therefore minimising any release of radioactive

materials into containment. The following systems have in-line RIVs and are located within containment:

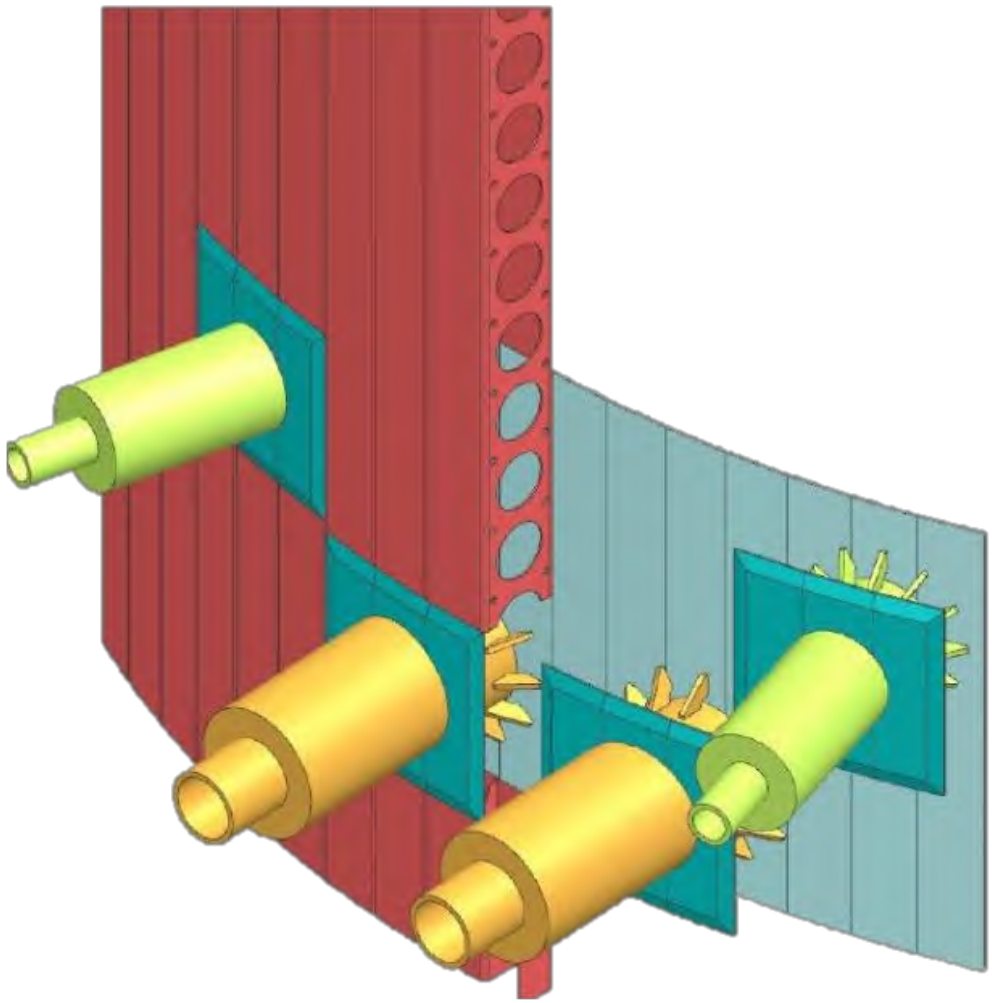
- The Nuclear Boiler System (NBS), specifically consisting of the main steam lines and the RPV Head Vent.
- The Process Radiation and Environmental Monitoring System, consisting of the continuous hydrogen and oxygen sampling system lines.
- The Isolation Condenser System, specifically consisting of the ICS steam supply and condensate return lines.
- The Condensate and Feedwater Heating System, specifically the feedwater supply lines from the feedwater heating system.
- The Control Rod Drive System.
- The Reactor Water Clean-up System
- The Containment Inerting System.
- The Passive Containment Cooling System.

Each system line that penetrates containment has dual redundant in-line CIVs that automatically close during accident scenarios, minimising any potential release path for fission products outside of containment.

Penetration sleeves are also used in the BWRX-300 design for high-energy lines (HELs) that penetrate containment, to reduce the effects of high temperatures or pressures on the containment concrete. HELs are defined for normal plant operations wither the maximum operating temperatures is greater than 95 degrees Celsius, or where the maximum operating pressure exceeds 1.9 Megapascals (gauge).

Each mechanical system penetration is also classified either as a “hot” or “cold” penetration with the BWRX-300, dependent on the thermal environment to which the penetration is subjected. Cold penetrations are directly embedded into the SCCV structure, whereas “hot” penetrations do not come in direct contact with the containment wall but are further contained within a thermal sleeve attached to the SCCV intended to minimise conductive heat transfer as illustrated in Figure A-12.

Figure A-12: Containment Penetration Cross-Sectional View Without Containment Wall (Source: GE Hitachi)



The length of the sleeve is designed to meet concrete temperature limitations specified in NEDC-33926P – *BWRX-300 Steel Plate Composite Containment Vessel and Reactor Building Structural Design Licensing Topical Report* [R2.5-45]. Electrical penetrations are sealed to the interior side of the SCCV pressure boundary.

CNSC staff reviewed OPG's PSAR and supporting documentation as it relates to containment penetrations and have determined while the information provided is sufficient for a licence to construct, OPG is required to provide further additional information to ensure the expectations of REGDOC-2.5.2 have been met.

A.2.5.5.4.4 Containment Inerting System and Overpressure Protection

The Containment Inerting System (CIS) is intended to preclude the combustion of hydrogen and prevent consequential damage to essential equipment and SSCs. It establishes and maintains an inert atmosphere with less than 4% dry-basis-percent

oxygen within containment during plant operating modes, except during refuelling or maintenance outages and for limited periods of time for inspection during low-power operation. The CIS also maintains a slightly positive pressure environment in containment to prevent air in-leakage from the Reactor Building.

The CIS is also intended to provide overpressure protection in beyond design-basis event scenarios. CNSC staff note that an ultimate assessment of the performance of containment structures is not available at this stage of BWRX-300 design.

Leakage rate testing of containment structures and components is performed to ensure leakage through containment and SSCs penetrating containment do not exceed allowable leakage rates. Testing measures the rate at which a contained air mass escapes through the containment boundary, at a specific pressure, using instrumentation compliant with Title 10 of the US Code of Federal Regulations (CFR) Chapter 50 Appendix J and the ANSI-56.8 standard. Additionally, periodic surveillance of SCCV penetrations and the CIVs is performed to verify that maintenance is completed as required throughout the service life of the SCCV.

Control of Combustible Gases

Control of combustible gases is not required at the start of a potential accident sequence due to the existing inert atmosphere. Generation of excess hydrogen could occur if a severe accident occurs; however, oxygen present during a severe accident alone is insufficient to create a combustible containment atmosphere.

The ICS includes an autocatalytic recombination device intended to remove non-condensable gases, to ensure that combustible concentrations of hydrogen and oxygen do not develop.

A.2.5.6 Electrical Power Systems

Subsection 4.5.10, *Electrical Power Systems*, of REGDOC-1.1.2 explains that an application for a licence to construct should specify the required functions and performance characteristics of each electrical power system that provides normal, standby, alternate, and emergency power supplies. This information should be sufficient to ensure that these power supplies have sufficient capacity to support safety functions of connected loads in operational states, DBAs, and design extension conditions (DEC).

Subsection 8.9, *Electrical Power Systems*, of REGDOC-2.5.2 outlines further expectations for the design of electrical systems, including that the design shall include the modes of interactions between on-site and off-site power, and that the design specifies environmental and electromagnetic conditions to which electrical equipment may be subjected.

Additionally, subsection 7.10, *General Design Requirements: Safety Support System*, of REGDOC-2.5.2 expects that any safety support system be available in all operational states, DBAs, and DECs, and have sufficient capacity, reliability,

and availability to meet the load requirements of systems performing fundamental safety functions (see subsection A.2.2.4 – *Safety Objectives, Goals, and Functions*).

Chapter 8 of NK054-SR-01210-10000 – *BWRX-300 Preliminary Safety Analysis Report* [R2.4-1] provides a description of each of the electrical distribution systems. OPG states that the electrical distribution system for the BWRX-300 is an integrated system, consisting of Safety Class 1, Safety Class 2, Safety Class 3, and non-Safety Class components.

The PSAR states that normal plant power is provided by either the main generator or from off-site power, with backup power provided by Standby Diesel Generators (SDG), and Safety Class 1 emergency power provided by uninterruptible power supplies, designed with sufficient capacity for equipment to perform any of their intended fundamental safety functions. Electrical power is required for monitoring, control, alarms, and communications for any design basis or beyond design basis accident and is accomplished by using a combination of safety-classified electrical distribution components and SDGs, as explained below.

OPG states that the Safety Class 1 electrical power system is designed to provide 72 hours of alternating (AC) and direct (DC) current, supported by the SDGs for a week following this initial 72-hour period, and with potential connections for external generators. OPG states that the capacity of this system has been designed to be able to support the continuity of fundamental safety functions until long-term electrical service is re-established, without the need for operator action to connect temporary services for at least eight (8) hours and without need for off-site services for at least 72 hours.

A.2.5.7 Instrumentation and Control

Subsection 4.5.11, *Instrumentation and Control*, of REGDOC-1.1.2 states that an application for a licence to construct should describe the instrumentation and control (I&C) systems used to support the safety of the facility. The application should include provisions to monitor and control reactor facility variables and systems over all operational states, DBAs, and DECs, in accordance with subsection 7.9, *Instrumentation and Control*, subsection 7.6, *Design for Reliability*, and subsection 7.21, *Human Factors*, of REGDOC-2.5.2.

Chapter 7, *Instrumentation and Control*, of the PSAR describes the overall BWRX-300 I&C system and supporting systems, also known as the Distributed Control and Information System (DCIS). The integrated DCIS is subdivided into several systems serving several defence line functions and with several safety classifications, each having independence and diversity requirements.

DCIS Safety Class 1 functions are implemented in three divisions of the DL3 “C10” digital I&C platforms, each located in separate divisional, fire-barriered, rooms in the reactor building.

Safety Class 2 and 3 functions are implemented in "C20" I&C platforms corresponding to DL4a and DL2 functions. The DL4a functions are implemented in a digital platform with 2-of-3 voting logic and is in a separate fire-barriered room in the Control Building (CB). The DL4a digital platform is diverse from the DL3 "C10" digital platform. DL 2 functions are implemented in hardware and software platforms located in separate, fire-barriered, rooms in the CB.

Non-safety class functions are associated with power generation systems and plant support systems. Non-safety related functions are implemented in "C30" I&C platforms located in a separate, fire-barriered, room in the CB.

CNSC staff found that the lifecycle for each I&C system follows the overall lifecycle specified in International Electrotechnical Commission (IEC) document 61513 – *Nuclear Power Plants: Instrumentation and Control Important to Safety – General Requirements for Systems* [R2.5-46], and systems engineering modelling to show "top-down" design and "bottom-up" integration for verification and validation testing.

CNSC staff focused the review of OPG's application and I&C supporting documentation based on the description provided in Chapter 7 of the PSAR against applicable regulatory requirements, concentrated in the following topical areas:

- Architecture of I&C systems,
- I&C System Classification and design lifecycle,
- Fundamental design properties for I&C systems including qualification, reliability, robustness, security, diversity, and defence in depth features,
- Software common-cause failures and design diversity,
- Single failure criterion,
- Fail-safe design,
- Sharing of instrumentation,
- I&C systems to implement the means of shutdown,
- Instrumentation to monitor accident progression,
- Control facilities, including a safety parameters display system, and
- Novel I&C engineering features.

CNSC staff reviewed OPG's application and supporting documentation related to I&C, and determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. During the review, CNSC staff identified three technical items that require further consideration.

Sharing of Signals between DL2 and DL4a Functions

As outlined in Chapter 7 of the PSAR, CNSC staff identified there is sharing of signals between sensors serving DL4a and DL2 functions. In this case, signal

sharing is accomplished using analogue splitters that do not use any software and are powered with redundant uninterruptible power supplies. DL4a is independent from DL2 to the extent practicable, in that shared sensors are not credited with mitigation functions for the same postulated initiating event.

CNSC staff requested OPG provide a list of signals shared in such a manner, which include sensors for reactor water level and pressure, feedwater flow, and containment pressure. REGDOC-2.5.2 does not prohibit signal sharing between sensors of different safety classes; however, it does require that levels of defence in depth be independent to the extent practicable. OPG stated that SC2 sensors used for DL2 and DL4a safety functions are diverse and independent of SC1 sensors used to perform DL3 safety functions; consequently, a common-cause failure of SC2 sensors shared to perform DL2 and DL4a functions has no adverse impact on DL3 functions using diverse and independent SC1 sensors.

Safety Class 2 sensors shared to perform DL2 and DL4a safety functions are triplicated, and the failure of a single sensor has no impact on these controllers allocated to each parameter for either the DL4a or DL2 safety function. The SC2 analogue splitter design ensures that a splitter output is unable to adversely affect the other outputs of the same splitter and meets the requirements of IEC 60709 – *Nuclear Power Plants: Instrumentation, Control, and Electrical Power Systems Important to Safety - Separation* [R2.5-47].

OPG also stated that additional sensors in the core to eliminate shared sensors, within containment, or connected to major Nuclear Boiler System (NBS) components would be infeasible or add design complexity in congested areas, increasing operating and maintenance costs and occupational radiation exposure, with no significant reduction in overall plant risk.

Based on a review of the BWRX-300 safety strategy, between DL2, DL3, and DL4 two independent and diverse lines can mitigate a PIE with a frequency greater than 1.0E-05 per reactor-year, for PIEs associated with a single failure. Between these three defence lines, at least one line can mitigate a PIE caused by a common-cause failure in another DL, with the means of mitigation being independent from the effects of an initiating common-cause failure.

With the fact that DL3 is independent of DL2 and DL4a functions in the BWRX-300, a complete and strict independence between DL2 and DL4a implies that DL4a should be capable of mitigating a concurrent common-cause failure in DL2 and DL3. OPG stated that it is not credible to postulate concurrent I&C common-cause failures in two different defence lines. CNSC staff concur that postulation of concurrent I&C common-cause failures in different defence lines in a deterministic safety analysis is not a regulatory requirement nor is it a typical industry practice. OPG also stated that the PSA will evaluate a broad range of scenarios involving multiple failures due to common causes or dependencies, to identify cases where a combination of failure frequency and consequence is not acceptable relative to plant-level safety goals.

CNSC staff conclude that the limited sensor sharing between DL2 and DL4a meets the requirements to maintain independence of defence levels to the extent practicable for the BWRX-300 I&C design. CNSC staff will conduct a more detailed assessment should a licence to construct be issued, and as the design progresses, to verify that the analogue splitters have been robustly designed and that the PSA has identified whether any combination of common-cause failures in the shared sensors need to be mitigated.

Interface between the Different Safety Classes of I&C Systems

Instrumentation and Control systems in the BWRX-300 are classified into one of three safety classes, each having a one-to-one correlation to the three functional safety categories associated with different defence lines. Subsection A.2.2.6.1 – *Safety Classification* provides more information on CNSC staff's assessment of the functional safety categories and classification of SSCs.

CNSC staff identified that the PSAR and its supporting documentation do not provide sufficient design rules to manage the interfaces of the different safety classes of I&C systems. The management of these interfaces should be designed and controlled to minimise the risk of having SSCs less important to safety adversely affecting the function or reliability of SSCs of greater importance, as outlined in REGDOC-2.5.2. OPG stated that the I&C design implements the Safety Strategy requirements for defence line independence and SSC classification requirements. OPG will provide evidence to demonstrate the effectiveness of meeting these requirements when managing interfaces between different safety classes in the *BWRX-300 Plant Level Instrumentation and Control Architecture Design Assurance Plan* [R2.5-48] and its supporting documentation as the design progresses.

CNSC staff determined that this is acceptable under the current design phase and CNSC staff will confirm this remains acceptable as the design progresses. OPG has committed to provide detailed design information regarding interface management as the design progresses. CNSC staff will conduct a detailed assessment to verify that the interfaces between different safety classes of I&C systems have been adequately managed.

As the design of the BWRX-300 I&C system has not progressed to complete design, CNSC staff have identified several areas where OPG is required to provide additional information:

- Sufficient evidence to verify the design approach to manage common-cause failures of digital I&C software, including the software used in SC1 DL3 I&C systems.
- Sufficient evidence to verify that the selected I&C platforms and their application to the BWRX-300 reactor meet applicable IEC standards, as well as CSA N290.14 – *Qualification for Digital Hardware and Software*

for Use in Instrumentation and Control Applications for Nuclear Power Plants [R2.5-49].

- Sufficient evidence to verify whether any event that leads to the unavailability of the Main Control Room (MCR) will not cause a simultaneous unavailability of the reactor operation workstations in the Secondary Control Room (SCR).
- Sufficient evidence to verify the I&C design to confirm successful actuation of the hydraulic trip function, upon its actuation.
- Sufficient evidence to verify that research and testing activities are, or will be, conducted to qualify the application of any novel I&C engineering features adopted in the design of the BWRX-300.

Based on the information provided and the preliminary design detailed in the PSAR and supporting documentation, CNSC staff found that OPG has provided sufficient information to support CNSC staff's recommendation. OPG has committed to submit additional detailed design information to demonstrate that the I&C systems will meet all applicable regulatory requirements. CNSC staff will review this information and conduct verification activities prior to a subsequent licence application, should the project proceed.

A.2.5.8 Steam Supply System

Subsections 4.5.13, *Steam Supply System*, of REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility* states an application for a licence to construct should provide design information related to the steam supply system, including the main steam lines, steam and feedwater system piping and vessels, and turbine generators. Subsection 8.3, *Steam Supply Systems*, of REGDOC-2.5.2 – *Design of Nuclear Facilities (version 1)* provides further expectations for each of the main components of the steam supply system.

CNSC staff reviewed the Steam Supply System described in the PSAR [R2.4-1] and relevant System Design Description (SDD) documentation, flowsheets, and flow diagrams that were available.

Chapter 10, *Steam and Power Conversion Systems*, of the PSAR describes the BWRX-300 steam supply system, alternatively known as the Steam and Power Conversion System. This system includes the following subsystems:

- Turbine Generator System (also known as "Main Turbine Equipment")
- Condensate and Feedwater Systems
- Main Steam Systems
- Main Condenser and Auxiliaries System
- Moisture Separator Reheaters
- Turbine Auxiliary Systems
- Circulating Water System

- Generator Exciter System

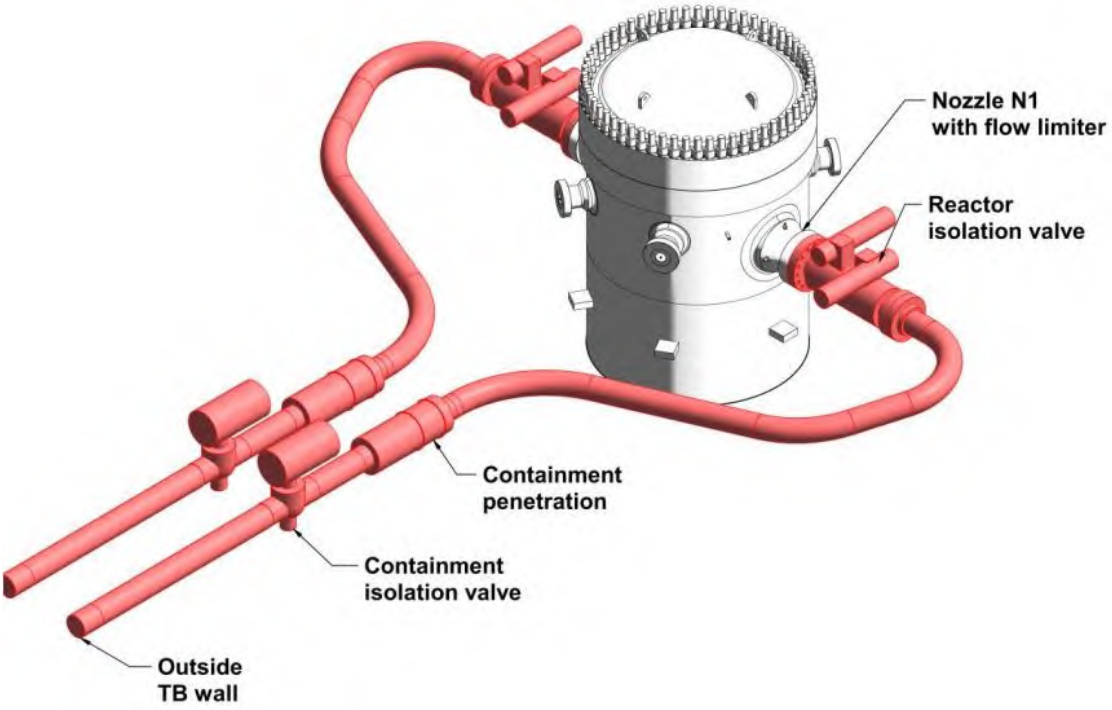
CNSC staff found that the documentation supplied for each of these systems provided a high-level explanation of the system design and functional requirements. The documentation incorporates references to appropriate CNSC regulations, regulatory documents, and external standards; however, CNSC staff found that the OPG is required to provide additional information to assess system operation across all normal and abnormal operating modes, or whether adequate safety margins will be maintained. OPG has committed to provide additional detailed design information regarding these systems as the design progresses, and CNSC staff will review the information to confirm the design meets regulatory expectations.

The SDDs for each system and subsystem have varied degrees of detail but provide information on items such as general system function, system interfaces, seismic requirements, and applicable codes and standards. However, they do not contain detailed and specific design requirements and parameters required to assess system operation against the safety analysis, and therefore does not contain operational limits and conditions (OLC).

A.2.5.8.1 Main Steam Lines (MSL)

Similar to existing BWRs, the BWRX-300 Main Steam Line (MSL), supplying steam from the RPV to the turbine contains a primary coolant that comes into direct contact with the fuel assembly. OPG's design proposes that the nuclear code classification for the MSL will be extended to the seismic reinforcement restraint anchor, to protect the function of the CIVs from breaks of HELs and seismic effects. Figure A-13 below shows the general layout of the MSL in relation to the RPV and highlights the RIVs and CIVs.

Figure A-13: BWRX-300 Main Steam Line Piping (Source: GE Hitachi)



Subsection 3.6.2.2.5 of the PSAR states that CIVs for the main steam and other process system piping that penetrates containment, and the Reactor Isolation Valves (RIV), are qualified for seismic and other RB vibration loads. The principal requirement following a DBE or other faulted RB vibration loading is to close and remain closed following the event. The PSAR indicates that the capability of the back-to-back RIVs and CIVs are demonstrated by testing and analysis. The RIVs are intended to lower the impact of a LOCA by closing the RIVs to isolate the RPV upon detection of a LOCA. CNSC staff has not yet been able to independently assess design details regarding the qualification, reliability, structural integrity, detailed design, closing time, RB vibration level, and design-bases transient lading conditions of either the CIVs or RIVs. OPG has committed to provide additional detailed design information as the design progresses, and CNSC staff will review the information to determine whether the design meets regulatory expectations.

Additionally, OPG has not provided information regarding the detailed configuration of the MSL for CNSC staff review. The functionality and integrity of the back-to-back RIVs directly impact the downstream piping code classification and overpressure protection features for pressure-retaining systems and components (PRSC) in the pressure boundary. CNSC staff will review the proposed MSL code classification (i.e., the nuclear code class up to the seismic reinforcement restraint anchor), including the reliability of the RIVs in their proposed configuration, and the radioactive material threshold limits in a postulated MSL failure.

A.2.5.8.2 Turbine-Generator System (Main Turbine Equipment)

The Turbine Generator System, also known as the Main Turbine Equipment system, is comprised of a single high-pressure turbine, two (2) low pressure turbines, and four (4) separate supporting subsystems:

- The Turbine Gland Seal subsystem (see subsection A.2.5.8.2.2 – *Turbine Gland Seal Subsystem*)
- The Turbine Lubricating Oil subsystem (see subsection A.2.5.8.2.3 – *Turbine Lubricating Oil Subsystem*)
- The Turbine Extraction Steam subsystem (see subsection A.2.5.8.2.4 – *Extraction Steam Subsystem*)
- The Electrohydraulic Controls subsystem (see subsection A.2.5.8.2.5 – *Electrohydraulic Controls Subsystem*).

CNSC staff reviewed the Main Turbine Equipment and its subsystems through SDDs, drawings, as well as information provided in Chapter 10 of the PSAR. CNSC staff found that the PSAR and SDDs describe the general expectations of the system to provide overspeed protection, as well as mitigate the potential for turbine missiles, according to the expectations of REGDOC-1.1.2 and REGDOC-2.5.2. Staff found that the drawings provided details on the expected system layout and relevant system interconnections and interfaces with other systems, as well as including references to expected and applicable codes and standards.

CNSC staff found that the documents did not provide design parameters, setpoints, alarm, or trip levels for any equipment listed, and the documents lack the analysis performed to substantiate any of the statements made.

CNSC staff have determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. Additional information will be required to determine whether the Turbine-Generator system, and its various subsystems, will meet applicable regulatory expectations. These commitments are detailed in the following subsections, and are summarised in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

A.2.5.8.2.1 Main Turbine

The PSAR provides overall details regarding the design for the flow of steam in the Main Turbine Equipment system, from the main steam turbine stop valves and the turbine control valves to the high-pressure (HP) turbine, then onto the two (2) low-pressure (LP) turbines, and onto the condenser. Both HP and LP steam are extracted for feedwater heating, and the steam from the HP turbine exhaust is subject to drying and reheating in a moisture separator reheater prior to injection into the LP turbine.

The safety significance of the main turbine is to act as the primary full-power heat sink during normal operation, and to ensure that overspeed of the turbine set, and failure of turbine components creating turbine missiles, is prevented.

CNSC staff's review noted that the general system function and arrangement is consistent with known designs. The motive steam supply to the turbines from the reactor is regulated, as required, for normal unit operation, with proper redundant control and isolation valves in place to prevent turbine overspeed during postulated accident conditions.

Isolation valve closure times are documented in the System Design Description (SDD) for the MTE system; however, staff noted that the SDD does not adequately reference these closure times to an analysis substantiating the prevention of turbine overspeed conditions.

In addition, Chapter 10, *Steam and Power Conversion*, of NUREG-0800 – *Standard Review Plan for the Review of Safety Analysis Reports* specifies the purpose of a turbine overspeed protection system is to ensure that any redundancy incorporated through use of main steam governor and stop valves, as well as mechanical means, are sufficient to prevent catastrophic damage to turbine blades and generation of turbine missiles. In general, thresholds are established for normal-load speed control and for abnormal-load speed control, at around 103% and 110% respectively.

The turbine can be prevented from entering overspeed conditions beyond these thresholds by means of governing the inflow of steam with governor valves should the speed approach 103%, or with a redundant mechanical means of actuating the governor, stop, and/or intercept valves should the turbine speed approach 110% or 120% of the rated turbine speed.

In its SDD, OPG has not described the operational parameters or operational safety limits to prevent the turbine shaft rotational speed exceeding 110% or 120% of its nominal speed. In addition, OPG has not provided information that analyses the impact of potential turbine missiles.

OPG will be required to provide further detailed information regarding the turbine overspeed protection logic, including operational safety limits and analyses substantiating the closing times of the turbine isolation valves.

A.2.5.8.2.2 Turbine Gland Seal Subsystem

Subsection 10.2.3.1 of the PSAR describes the function of the Turbine Gland Seal Subsystem as the system designed to supply sealing steam to the turbine shaft, casing, and the turbine steam admission valves to prevent the escape of any radioactive steam and to prevent air in-leakage through sub-atmospheric turbine glands.

The safety significance of this system is to ensure that high-energy steam and contaminated steam cannot exhaust from the high-pressure turbine shaft seals or the turbine system control and isolation valves. The Turbine Gland Seal Subsystem also prevents air in-leakage through the low-pressure turbine shaft seals to maintain feedwater chemistry.

CNSC staff's review of the supplied documents noted that the documented general system function and arrangement is consistent with known designs. There are redundant steam supplies for normal operating modes, and the system arrangement accounts for fault tolerances.

A.2.5.8.2.3 Turbine Lubricating Oil Subsystem

Subsection 10.2.3.2 of the PSAR describes the function of the Turbine Lubricating Oil System as the system intended to supply lube oil to the turbine, generator, and exciter bush bearings. The Turbine Lubricating Oil System also includes redundant pumps to continuously supply oil to the bearings, an oil storage tank, heat exchangers, and an oil conditioning system.

The main turbine has significant rotational energy under normal conditions, and the safety significance of the Turbine Lubricating Oil System is to ensure that the turbine shaft is lubricated during all normal and abnormal modes of operation, to maintain shaft integrity and minimise risks to plant personnel.

CNSC staff's review of the documentation submitted noted that the general system design and arrangement are similar to known designs and appear to address operational requirements with a redundant and fault-tolerant design. Staff also noted that specific design parameters and operational logic details have not yet been provided, nor have operational limits or trip setpoints been documented or analysed. OPG will be required to provide further detailed information regarding design parameters and operational logic to ensure the Turbine Lubricating Oil System meets regulatory expectations.

A.2.5.8.2.4 Extraction Steam Subsystem

Subsection 10.2.3.3 of the PSAR describes the function of the Extraction Steam system as the system to provide the means to transport extraction steam from the HP turbine to the Moisture Separator Reheater (MSR) and feedwater heaters, and to protect the turbine against overspeed and water induction conditions.

The safety significance of this system is that it is designed, during all operating modes, to provide protections against steam admission to the turbine during transient conditions, which will mitigate turbine overspeed conditions, as well as to prevent water ingress into the turbine to prevent damage to the turbine blades.

CNSC staff's review of the documentation provided noted that the overall system function is generally defined, with the safety relevance recognising the importance of steam admission check valves during unit or system transients, as well as the provision of condensate drainage to prevent water ingress. OPG has committed to

provide detailed system design information, detailed information regarding the integrated system operation, as well as additional documentation specifying how this system meets applicable regulatory requirements.

A.2.5.8.2.5 Electrohydraulic Controls Subsystem

Subsections 10.2.3.4 and 10.2.3.16 of the PSAR describe the purpose of the Electrohydraulic Controls is to provide hydraulic fluid to position valves controlling the flow of steam to the turbines, including the turbine stop valves and turbine control valves. The Electrohydraulic Controls is also intended to actuate trip devices in the turbine trip and overspeed protection circuits.

CNSC staff's review of the documentation provided noted that the Electrohydraulic Controls system is like those in operating reactors. The overall system functionality indicates that redundant supplies of hydraulic fluid are expected as well as normal overpressure protections. The trip of the turbine on receipt of a signal from the reactor control system, or Electrohydraulic Controls system failure, is redundant and fault-tolerant with triplication and implementation of fail-safe designs.

OPG has committed to provide detailed system design information, detailed information regarding the integrated system operation, as well as additional documentation specifying how this system meets applicable regulatory expectations.

A.2.5.8.3 Condensate and Feedwater Systems

Subsection 10.3.2 of the PSAR describes that the purpose of the condensate portion of the condensate and feedwater system (CFS) is to move condensate extracted from the main condenser through the Condensate Filters and Demineralisers system, as well as through multiple stages of feedwater heating to the reactor feed pumps. The feedwater portion of the CFS system is designed to move feedwater through the multiple feedwater heating stages and to the reactor inlet nozzles. The CFS supply also has additional subsystems providing purification and condensate makeup supplies.

The safety significance of this system is to provide feedwater to the reactor's normal heat sink under normal operating conditions. It also provides containment isolation valves at the inlet side of the RPV to isolate the CFS system in the event of a feedwater line break.

CNSC staff's review of OPG's submissions noted that the design of the CFS system is like those of operating reactors; however, it differs in that there is no parallel redundant feedheating flow path, nor are there provisions for backup or emergency high-pressure feedwater pumps. The functionality of the CFS includes redundancies and has fault-tolerance built into the design. Redundant pumps, and the ability for the low-pressure and high-pressure feedheating systems to allow for a single feedheater bypass to maintain normal operation, is included in the design. Monitoring of critical parameters is achieved through triplicated monitoring logic.

CNSC staff found the provided process drawings were adequate and provided details on the expected system layout and interconnections with other interfacing systems, as well as included appropriate references to applicable requirements and codes and standards.

A.2.5.8.3.1 Main Steam System

Subsection 10.4 of the PSAR describes the Main Steam System as a steam supply subsystem that includes relevant pipework and valving connecting the Nuclear Boiler System (NBS) with the MTE, as well as other interconnected systems associated with, or that require, main steam (i.e., the Moisture Separator Reheater (MSR) system, and the High-Pressure Feedwater Heat Exchangers).

The Main Steam System continues the steam pressure boundary from the NBS as well as the control and drainage of condensed steam during all operational states, to prevent water carryover into the turbine, as well as prevent of both water and steam hammer.

CNSC staff's review of OPG's submissions noted that the functionality and expectations of the system were identified, and that appropriate standards and codes were identified. CNSC staff determined there the information provided was sufficient to support a recommendation that the Commission issue a licence to construct. Additional information will be required to confirm this system will meet regulatory expectations.

A.2.5.8.3.2 Main Condenser and Auxiliaries System

Subsection 10.5 of the PSAR describes the Main Condenser and Auxiliaries system as a subsystem that receives exhaust steam from the low-pressure turbines and, via the Main Steam System, the Turbine Auxiliary Steam System. The Main Condenser is also the primary collection point for other steam-cycle relief valve discharges, drains, and vents. The Main Condenser condenses and deaerates the steam and water inputs, allowing the water time to accumulate and provide a time-delay function to allow radioactive nitrogen-16 in the water to decay.

CNSC staff's review of OPG's submissions noted that the general expectations of the Main Condenser and Auxiliaries fulfill the design requirements and provide adequate details describing the system layout and the various interconnections with interfacing systems. The function of the system is defined in the provided documentation, including the expected main condenser operating pressure. References to safety analyses or other operating requirements as related to monitoring parameters that would require a turbine trip or other protection measures were not identified. CNSC staff noted that the requirement to maintain triplicated instrumentation to support redundant and single fault-tolerant parameters is identified in the description of the Main Condenser and Auxiliaries system. Finally, the auxiliary systems that support and maintain the condenser vacuum are consistent with those of operating reactors and provide redundant and fail-safe operation.

CNSC staff have determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. Additional information will be required to confirm this system will meet regulatory expectations.

A.2.5.8.3.3 Moisture Separator and Reheaters

The Moisture Separator Reheater (MSR) are combined moisture-separator and dual-stage reheater vessels. Subsection 10.6.3 of the PSAR describes the function of the MSR to reheat the high-pressure turbine exhaust and redirect this reheated steam into the low-pressure turbine. Its purpose is to dry and reheat the expanded steam from the high-pressure turbine to improve the thermal efficiency of the thermodynamic cycle and to reduce potential damage to the low-pressure turbines due to water impingement.

The MSR system does not have a safety significance aside from the maintenance of the steam pressure boundary; however, the steam admission valves to the MSR form part of the overall turbine overspeed protection system, as they prevent steam admission into the low-pressure turbines following a turbine trip. Additionally, the MSR drains subsystem protects the turbine from water carryover and therefore protects the integrity of the turbine.

CNSC staff's review of the provided documentation noted that the system function is defined, and appropriate standards and codes are referenced. CNSC staff have determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. Additional information will be required to confirm this system will meet regulatory expectations. OPG has committed to provide this additional information as the design progresses.

A.2.5.8.3.4 Turbine Auxiliary System

The Turbine Auxiliary System is comprised of piping and associated Turbine Bypass Valves that take excess steam from the NBS and routes it directly to the condenser heat sink in the event where the MTE is unavailable. The Turbine Bypass Valves are controlled by the Reactor Pressure Control system to support regulation of the RPV during normal and abnormal operations.

The safety significance of this system is to provide the RPV with pressure regulation and protection during normal and postulated accident scenarios, as well as to provide Main Steam System overpressure protection during turbine trips.

CNSC staff's review of OPG's submissions noted high-level information was available for the system and its associated components and explains the expected function of the system. OPG's submissions contains definitions for the capacity and capabilities of certain components, notably that the expected Turbine Bypass Valves capacity would be approximately 25% of the rated full-power steam capacity. Each Turbine Bypass Valve would normally be controlled by the Reactor

Pressure Control system, with backup supply provided by a hydraulic pack allowing for limited operation of the Turbine Bypass Valves upon a loss of power.

CNSC staff have determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. Additional information will be required to confirm this system will meet regulatory expectations.

A.2.5.8.3.5 Generator Exciter System

The Generator-Exciter System is comprised of the synchronous electric generator itself, as well as several support subsystems such as generator shaft seals, generator bearings, heat exchangers, neutral grounding resistor(s) and associated neutral grounding transformer(s), potential transformers, current transformers, surge protection, generator protection panel, and associated relaying circuits.

Subsection 10.9 of the PSAR describes the purpose of the Generator-Exciter system is to convert the rotational energy of the turbine into electrical power that is then transmitted to the non-safety electrical distribution system and the utility power grid.

The Generator-Exciter system does not have a safety significance as related to the safe operation of the reactor; however, mechanical, or electrical equipment faults present a significant general safety concern.

CNSC staff's review of OPG's submissions noted that the function of this system is defined with expected rotational speeds and voltages identified. Detailed information such as pressures, expected temperatures, normal and abnormal operating conditions is not identified, nor is there indication of generator/turbine trip setpoints and associated references to safety analyses. CNSC staff noted that the expected generator faults and trips identified in the provided documentation are adequate; however, a supporting analysis documenting that these were appropriate trip levels was not provided.

CNSC staff have determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. Additional information will be required to confirm this system will meet regulatory expectations. OPG has committed to provide this additional information as the design progresses.

A.2.5.9 Auxiliary Systems

The PSAR identifies several auxiliary systems for the BWRX-300 reactor, including the following:

- Associated water supply systems, including:
    - The Circulating Water System (CWS),
    - Reactor Water Cleanup (CUW) System,

  - Shutdown Cooling (SDC) System,
  - Chilled Water Equipment (CWE) System,
  - Isolation Condenser System Pool Cooling and Clean-up (ICC) System,
- Heat Transfer to an Ultimate Heat Sink
- Heating, Ventilation, and Air Conditioning
- Process Auxiliary Systems, including:
  - Plant Pneumatic System (PPS)
  - Standby Diesel Generator (SDG) Supporting Systems

CNSC staff review of each of these auxiliary systems are described in the following subsections.

A.2.5.9.1 Auxiliary Water Supply Systems

Subsection 4.5.14, *Auxiliary Systems*, of REGDOC-1.1.2 states that the application should provide information regarding the water systems associated with the reactor, including station service water systems, cooling for reactor auxiliaries, makeup system for demineralised water, the condenser cooling water system, fire protection water supply systems, the ultimate heat sink, and condensate storage facilities.

Subsection 9A.2 of Chapter 9B, *Auxiliary Systems*, of the PSAR provides an overview of each of the associated auxiliary water supply systems.

A.2.5.9.1.1 The Circulating Water System

The Circulating Water System (CWS) consists of both the Main Condenser supply and Plant Cooling Water (PCW) supply subsystems. The Main Condenser supply system, also described in this CMD as the Condenser Cooling Water (CCW) system, uses two fifty-percent duty pumps to provide cooling capacity to the Condensers during all states of condenser heat removal. Subsection A.2.4.5 – *The Normal Heat Sink and the Condenser Cooling Water (CCW) System* provides a description of the Normal Heat Sink and Main Condenser Supply system.

The Main Condenser supply pumps provide circulating water to the main condenser to support rated turbine-generator power operation. Water is pumped from the intake forebay to the tube side of the condensers in the Turbine Building, where it is used to condense the infalling steam, before returning to the Normal Heat Sink. The Main Condenser supply pumps must be in operation prior to any steam or other high-energy heat source is routed to the condenser.

The PCW supply uses two 100-percent duty pumps to provide cooling water to the PCW system heat exchangers for all normal and abnormal operating conditions. Each of the CWS pumps are located in the Normal Heat Sink intake structure pumphouse.

The Plant Cooling Water System is a subsystem of the Circulating Water System , with primary responsibility to circulate cooling water to the Reactor Component Cooling Water Piping Distribution and Turbine Component Cooling Water Piping Distribution Systems during normal operation and anticipated operational occurrences, including startup, power operation, hot shutdown, cold shutdown, stable shutdown, and refuelling (refer to subsection A.2.2.2 – *Identification of Facility States and Operational Configurations* above for a description of each of these plant operating states). The PCW is responsible for rejecting the total heat load associated with equipment coolers in the Reactor Component and Turbine Component cooling loads.

The safety design bases for the PCW includes the following Safety Class 3 functions:

- Control of the temperature of the spent fuel pool
- Cooling for the Shutdown Cooling System heat exchanger

CNSC staff reviewed the documentation provided for the PCW system and noted that the system function is defined; however, expected design details such as operating parameters (i.e., pressure, temperature, flow rates) are not yet provided. OPG has committed to provide additional information on the design of the CWS as the design progresses.

A.2.5.9.1.2 Reactor Water Cleanup System (CUW)

Subsection 9A.2.2 of the PSAR provides a description of the Reactor Water Cleanup (CUW) System. The CUW provides a means for the purification of the reactor coolant during the power operation state, to prevent sludge and scale formation on the walls of the RPV. Filtration and ion exchange removal during normal power operation is achieved using the associated Condensate Filter and Demineraliser system.

The CUW is a single-train system that receives initial flow through two nozzles affixed to the RPV. The inlet piping is connected to existing RPV penetrations at the middle of the vessel, where it is connected to the vessel and forms one discharge line. Flow for the CUW system is withdrawn from this single discharge line. The piping for the CUW system continues through a regenerative heat exchanger and pressure reduction devices, designed to condition the water to appropriate temperatures and pressures for processing to the condensate system. The discharge piping is connected to either a condensate line for return to the RPV during normal operation, with secondary connections to the condenser hotwell or Liquid Waste Management (LWM) system.

The safety design bases for the CUW system includes the following functions:

- Defence Line 3 leak detection that isolates the CUW system upon detecting a line break. Isolation valves will close upon receipt of a signal from the SC1 I&C system.

- Defence Line 4a leak detection activating CUW isolation on an indication of break of the CUW lines. Upon detection, the SC2 and SC3 I&C System activates the CUW isolation valve.

CNSC staff reviewed the documentation provided for the CUW system and noted that the system function is defined; however, expected design details such as operating parameters (i.e., pressure, temperature, flow rates) are not yet provided. OPG has committed to provide additional information on the design of the CUW as the design progresses.

A.2.5.9.1.3 The Shutdown Cooling System (SDC)

Subsection 9A.2.3 of the PSAR describes the Shutdown Cooling System (SDC). The function of the SDC system is to provide for the removal of decay heat when transitioning from the operational to shutdown states. The SDC can also be used alongside the CUW to reduce thermal stratification in the RPV.

The SDC system is used to reduce RPV pressure and temperature during cooldown operations from the rated design pressure and temperature to below-saturation temperatures at atmospheric pressure in less than one day.

The SDC system has two independent pump and heat exchanger trains that can together provide redundant 100% decay heat removal capacity four hours after reactor shutdown. Each SDC train intake is independently connected to a separate Isolation Condenser System (ICS) condensate return line downstream of the ICS containment isolation valves. Each SDC train's return piping is connected to separate Condensate and Feedwater System lines outside of the containment isolation valves.

The SDC's decay heat removal function comprises a flow path from the ICS to the SDC pump, through the tube side of the SDC heat exchanger, and ultimately returned to the RPV through the Condensate and Feedwater System. This flow path is available in all reactor operating states with the exception of normal power operation but is intended to be put into service following initial plant cooldown through the Main Condenser and the ICS.

When actuated in decay heat removal mode, the SDC is initially operated in a low flow condition to bring SDC components to operating temperatures and minimise thermal stresses. At operating temperatures, the flow rate is increased to maintain the PCW heat exchanger cooling water exit temperature at either 54.4 degrees Celsius (two SDC trains) or 60 degrees Celsius (for a single SDC train).

CNSC staff reviewed the documentation provided for the SDC system and noted that the system is generally defined. Expected design details such as operating parameter (i.e., pressure, temperature, pressure protection requirements, and flow rates) are not yet provided. OPG will be required to provide additional information on the design of the SDC as the design progresses.

A.2.5.9.1.4 Chilled Water Equipment (CWE) System

Subsection 9A.2.4 of the PSAR describes the Chilled Water Equipment (CWE) system. The purpose of the CWE system is to provide a continuous supply of chilled water to several systems throughout the plant including the Heating, Ventilation, and Air Conditioning systems throughout the facility, to the offgas cooler, to the charcoal adsorber fan coil units, and to the CCS.

The CWE system consists of two redundant trains, each equipped with two air-cooler chillers, two pumps, a single expansion tanks, and two air separators. Both trains share common features and are interconnected with normally open air-operated valves.

Each air-cooled chiller is designed for 33% capacity to reject heat from the CWE to the environment. During normal operations, three chillers are in service with the fourth in a standby condition. The air separators are provided to remove any entrained air in the CWE loop and is connected to the chilled water return header upstream of the chillers. Air removed from the separators is pumped into the expansion tank to provide a gas cushion for chilled water expansion and contraction.

CNSC staff's review of OPG's submissions noted that the system function is defined and is designed with sufficient redundancy to ensure that chilled water is normally available during all plant operational states. Expected design details such as operating parameter (i.e., pressure, temperature, pressure protection requirements, and flow rates) are not yet provided. OPG has committed to provide additional information on the design of the CWE as the design progresses.

A.2.5.9.1.5 Isolation Condenser System Pool Cooling and Clean-up System

Subsection 9A.2.6 of the PSAR describes the Isolation Condenser System Pool Cooling and Clean-up System (ICC). The primary function of the ICC system is to remove heat from the ICS pools and maintain the bulk fluid temperature below acceptable limits, to ensure that the ICS can perform its safety function. The ICC also has secondary functions including the maintenance of the cleanliness of the ICS pool water and providing the capability to add make-up water during normal operations to offset water loss due to evaporation.

The ICC consists of two independent trains, each having a pump and heat exchanger capable of handling 50% of the heat removal capacity from the three ICS pools. Both trains take their inlet from a single point in outer pool of Isolation Condenser A, with processed pool water returned directly to the three ICS pools. Each train can be operated or isolated as required to maintain ICS capability, with the system capable of operating with both trains simultaneously or separately to allow for maintenance.

CNSC staff's review of OPG's submissions noted that the system function is defined, although CNSC staff identified a concern with the safety classification of the ICC and is subject to further review as the design progresses. Subsection A.2.2.6.1 – *Safety Classification* describes OPG's commitments to address CNSC staff's comments on OPG's safety classification scheme.

OPG has committed to provide design details for the ICS Pool Cooling and Clean-up System such as operating parameters (i.e., pressure, temperature, specification limits for the pool, overpressure protection requirements, and flow rates) which CNSC staff will review to verify regulatory expectations are met.

A.2.5.9.2 Heat Transfer to an Ultimate Heat Sink

The heat sink under normal operating conditions for the BWRX-300 reactor is Lake Ontario, with cooling water provided through the Condenser Cooling Water (CCW) system. Normal heat transfer to the heat sink is provided by the CCW, SDC, and Plant Cooling Water subsystems as previously described.

Under certain accident conditions, the Isolation Condenser System pools provide the function of the Ultimate Heat Sink. As described in subsection A.2.5.5.2 – *The Isolation Condenser System as a System Supporting the Emergency Core Cooling Function*, the ICS is a natural convection system that receives core decay heat and is then vented to atmosphere. In the event of a loss of site power, the ICC system will no longer operate to provide cooling and make-up inventory for the ICS pools, and the water in the ICS pools would gradually boil. As described above, a single ICS pool is intended to provide sufficient inventory for removal of decay heat for several days following a loss of site power, with the other pools providing additional heat removal capacity. In the event of a prolonged loss of site power, the inventory make-up of the ICS pools is ultimately assured via Emergency Mitigation Equipment (EME) capabilities.

A.2.5.9.3 Heating, Ventilation, and Air Conditioning

Subsection 4.5.14, *Auxiliary Systems: Heating, Ventilation, and Air Conditioning Systems*, of REGDOC-1.1.2 states that an application for a licence to construct should describe the plant's heating, ventilation, and air conditioning (HVAC) systems, including areas such as the control room, spent fuel pool area, radioactive waste areas, the turbine building in BWRs, and safety system ventilation systems. The safety significance of any HVAC system credited in the safety analysis should also be clearly stated.

Subsection 9A.5 of the PSAR describes the function of the HVAC systems are to maintain the temperature, required air quality and pressurisation, ensuring the integrity and proper operation of Powerblock equipment, as well as provide a controlled environment for personnel safety and comfort.

The Heating, Ventilation, and Air Conditioning System (HVS) consists of several subsystems that serve five (5) different areas within the BWRX-300 reactor

building, including the Control Building (CB), the RB, the Radwaste Building (RWB), the Turbine Building (TB), and the Plant Services Area of the TB. Each of these areas is vented through a common plenum, and through the Plant Vent Stack to the atmosphere.

The safety significance of the HVS is to ensure that the air quality in these areas meets regulatory requirements and ensuring that movement of contamination is minimised or eliminated during normal and abnormal unit operations. Subsection A.2.2.3 – *Radiation Protection in Design* provides a discussion of ventilation performance requirements to minimise the movement of contamination throughout the facility. The HVS also ensure that areas or rooms with environmentally qualified (EQ) equipment that provides a function important to safety are maintained within their acceptable design limits, such that their function is not impaired.

CNSC staff's review of provided information for the HVS noted that the PSAR and the respective System Design Description describe the general expectations of the HVS to fulfill design requirements; however, some equipment has yet to be assigned to a safety classification. OPG provided drawings that had adequate descriptions of the expected system layout and interfaces to connecting or interfacing systems.

CNSC staff's review of OPG's submissions identified that the documentation did not provide detailed design parameters, setpoints, alarm, or trip levels for HVS equipment. Additionally, the documents provided did not discuss performance requirements of the HVAC system specific to the TB during a Main Steam Line break accident, which could result in the extension of a required physical barrier beyond the containment structure in the RB. CNSC staff noted that the SDD provides some detail on the expected performance of the HVS during radiation or contamination incidents and system isolation behaviour to ensure that contamination is minimised.

CNSC staff determined that the information provided was sufficient to support a recommendation for a licence to construct. OPG has committed to provide further detailed information on the HVS system to ensure that it will meet regulatory expectations.

A.2.5.9.4 Process Auxiliary Systems

Subsection 4.5.14, *Auxiliary Systems: Process Auxiliaries*, of REGDOC-1.1.2 states that an application for a licence to construct should describe the auxiliary systems associated with the reactor process system.

CNSC staff's review of OPG's submissions for these various process auxiliary systems is discussed in the following subsections.

A.2.5.9.4.1 Plant Pneumatic System

The Plant Pneumatic System (PPS) is designed to provide a continuous supply of compressed air for plant air demands. A backup supply is provided by backup air receivers and compressed air bottles to ensure a supply of compressed air under certain accident scenarios. The PPS provides functionality to the service air and instrument air systems, and supplies oil-free air to service boxes as part of the portable breathing-air filtration systems.

CNSC staff's review of OPG's submissions for the PPS noted that the system is defined; however, detailed design information such as operating pressures and expected air flow rates are not provided. The information provided is sufficient for a licence to construct and OPG has committed to provide additional documentation describing the integrated PPS operation, to demonstrate how this system will be designed, installed, commissioned, and operated in accordance with regulatory expectations.

A.2.5.9.4.2 Standby Diesel Generator (SDG) Supporting Systems

As described in subsection A.2.5.6 – *Electrical Power Systems*, the BWRX-300 has a backup electrical supply provided by two (2) standby diesel generators (SDG), providing electrical power to important safety systems in the event of a loss of off-site power.

CNSC staff's review of the documentation provided for the SDG supporting systems noted that the systems were defined; however, detailed design information such as SDG starting battery sizes, power supply requirements, and lube oil pump detail, was not provided.

CNSC staff expect OPG to provide the detailed information required for the SDG supporting systems, as well as additional design details such as cooling system temperature limits and design pressures, to verify that the design, manufacturing, installation, commissioning, and operation of the SDGs and supporting systems will meet regulatory requirements and expectations.

A.2.5.10 Fuel Handling and Storage Systems

Subsection 4.5.15, *Fuel Handling and Storage*, of REGDOC-1.1.2 states that an application for a licence to construct should describe the fuel handling and storage system(s) in accordance with REGDOC-2.5.2 – *Design of Reactor Facilities (version 1)*, including details for:

- Provisions for monitoring and alarming of critical parameters,
- Provisions for the prevention of inadvertent criticality, and
- Provisions for the shielding, handling, storage, cooling, transfer, and transport of un-irradiated and irradiated fuels.
- Provisions and methods for detection of failed fuels.

Subsection 8.12, *Fuel Handling and Storage*, of REGDOC-2.5.2 also outlines expectations that the design include barriers to prevent insertion of incorrect, defected, or damaged fuel into the reactor, as well as requiring compliance with REGDOC-2.4.3 – *Nuclear Criticality Safety*.

CNSC staff's review of the BWRX-300 Fuel Handling and Storage System also included additional relevant national and international guidance documents such as:

- CSA standard N292.1 – *Wet Storage of Irradiated Fuel and Other Radioactive Materials (2016 edition, reaffirmed in 2021)* [R2.5-50],
- International Nuclear Safety Advisory Group (INSAG) 10 – *Defence in Depth in Nuclear Safety* [R2.5-51],
- International Atomic Energy Agency (IAEA) Specific Safety Guide (SSG) 63 – *Design of Fuel Handling and Storage Systems for Nuclear Power Plants* [R2.5-52], and
- IAEA SSG-73 – *Core Management and Fuel Handling for Nuclear Power Plants* [R2.5-53]

Subsection 9A.1 of the PSAR describes the BWRX-300 Fuel Handling and Storage System and its associated subsystems. The purpose of CNSC staff's review was to verify that the preliminary design of the FHS includes the capability to transfer un-irradiated and irradiated fuels, ensure the integrity of the fuel, provide for safe storage facilities, provide the capability to respond to abnormal conditions, as well as including the facilities to allow for surveillance, inspection, and testing of the fuel.

CNSC staff review of the provided documentation noted that the detailed design is not yet complete; however, there is sufficient information to provide a preliminary assessment of the FHS system.

The Fuel Storage Pool contains several fuel storage racks, intended to store new fuel once received on-site and prior to core loading, as well as fuel that is discharged from the reactor during refuelling outages. The portion of the reactor building above-grade houses the refuelling floor, fuel handling systems, and the associated RB crane.

Figure A-14 below provides an overview of the Fuel Storage Pool arrangement, including the fuel storage racks, the cask loading area, and the relation between the fuel handling areas and the reactor well.

The safety design bases of the Fuel Handling System, and specifically the Fuel Storage Pool, include the following:

- The Fuel Storage Pool is designed such that required water inventory is maintained during normal and abnormal operating conditions, through implementation of engineered measures to prevent drainage of inventory below levels required for shielding and cooling functions.

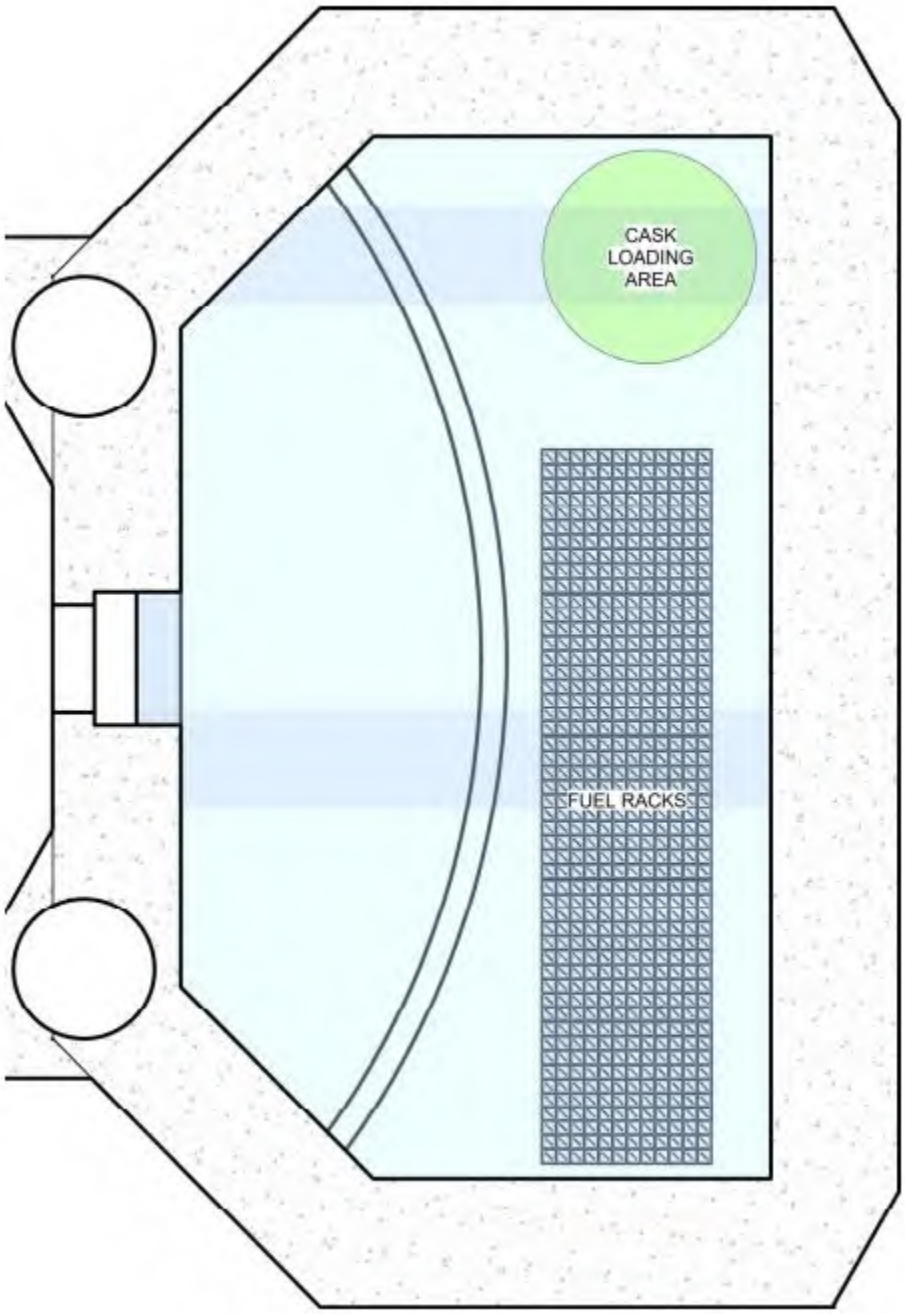
- Fuel stored in the Fuel Storage Pool is protected from damage caused by a drop of fuel assemblies or other objects onto stored fuels, through assessment of the impacts of postulated drops of fuel or other components.
- Provisions are available for the control of airborne releases of radioactive material.
- Subcriticality is maintained by sufficient margins when irradiated fuel is discharged from the reactor into the fuel storage racks, in compliance with REGDOC-2.4.3 - *Nuclear Criticality Safety (version 1.1)*.

A.2.5.10.1 Summary of the Fuel Handling Process

New fuel, once received on-site, is inspected, and craned into the fuel storage racks within the Fuel Storage Pool. The un-irradiated fuel is stored in the same fuel storage racks as discharged fuel. The BWRX-300 facility does not include a new fuel receiving or storage area and uses the same equipment used to handle irradiated fuel.

During a fuelling outage, an overhead crane serving both the RPV, and the Fuel Storage Pool is used to transfer fuel into and out of the core. Fuel discharged from the reactor is stored in available spaces in the fuel storage racks, controlled subject to criticality requirements and restrictions.

Figure A-14: BWRX-300 Fuel Storage Pool Arrangement (Source: GE Hitachi)



Failed fuel is detected during operations through monitoring of the Offgas System, and the Fuel Pool Cleaning system provides cooling and filtration to the fuel pool inventory. When the decay heat is sufficiently low to allow for dry storage, fuel is loaded into canisters in Cask Storage Area of the Fuel Storage Pool, before being transferred to a washing area and onto interim- and long-term storage facilities.

CNSC staff's review of OPG's application and supporting documentation determined that the level of design information is sufficient to address the expectations outlined in REGDOC-1.1.2 and REGDOC-2.5.2.

A.2.5.10.2 Fuel Handling Supporting Systems

The primary function of the Fuel Pool Cooling (FPC) system is to provide continuous cooling of the water inventory in the Fuel Storage Pool to remove decay heat from irradiated fuel, and to provide replacement coolant inventory to compensate for losses due to evaporation, to ensure that the irradiated fuel remains cool and submerged until it can be transferred to dry interim or long-term storage. The FPC system also includes provisions for demineralisation and particulate filtration to maintain the quality of the coolant and reduce ambient radiological dose rates.

The FPC consists of two independent trains of equipment, each with a pump, demineraliser, and heat exchanger. The components of each train are placed in parallel to allow for a single train to operate at any given time, and to allow for cross-connection of equipment should a component fail. The design is sufficient to allow for a single train to prevent bulk boiling of the inventory in the Fuel Storage Pool. If both trains are inoperable, the volume of water in the Fuel Storage Pool is sufficient to allow for fuel coverage for seven (7) days, with make-up capacity provided through independent means.

CNSC staff's review of the documentation provided for the FPC system noted that the system is defined; however, detailed operating parameters are not provided. OPG has committed to provide this detailed information as the design progresses, to demonstrate that the fuel handling systems have been designed, manufactured, installed, and commissioned to meet regulatory expectations, codes, and standards.

A.2.5.11 Waste Treatment and Control Systems

Subsection 4.15.6, *Waste Treatment and Control*, of REGDOC-1.1.2 and subsection 8.11, *Waste Treatment and Control*, of REGDOC-2.5.2 – *Design of Reactor Facilities* states that an application for a licence to construct a reactor facility should describe how the generation of radioactive and hazardous wastes are minimised, how wastes are characterised, controlled, handled, conditioned, and disposed of, and indicate which systems are or will be in service before initial fuel load. .

Subsection 8.11 of REGDOC-2.5.2 outlines expectations that the design of the reactor facility includes provisions to treat liquid and gaseous effluents in a manner that will minimise the quantities of discharged contaminants, consistent with the ALARA principle. REGDOC-2.5.2 also requires that the design include adequate provisions for the minimisation of radioactive and hazardous wastes, as well as adequate provision for the safe onsite handling and storage of such wastes.

The following subsections provide a discussion of the systems within the BWRX-300 facility for the management of liquid and gaseous wastes.

A.2.5.11.1 Systems for the Management of Liquid Radioactive Wastes

Subsection 11.2 of the PSAR describes the system in place for the management of liquid radioactive waste from BWRX-300 reactor operations. The purpose of the Liquid Waste Management (LWM) system is to collect liquid radioactive waste from various locations throughout the plant from the Equipment and Floor Drain System (EFS), separate and filter the liquid wastes, and return the filtered water to the Condensate Storage Tank (CST) for reuse in the plant.

As presented in CNSC staff's CMD 24-H2 – *CNSC Staff Review and Assessment of the Applicability of the DNNP Environmental Assessment to OPG's Selection of the General Electric Hitachi BWRX-300 Reactor* [R1-2], OPG intends to operate the BWRX-300 reactor in a "zero liquid waste" configuration. This means that for normal operation, there will not be liquid effluent discharged to a receiving water body from the facility.

The LWM performs several non-safety-category functions during normal operating conditions:

- Collect potentially contaminated radioactive liquid waste from plant areas via the EFS for processing and filtering, and return condensate quality water to the CST.

- Act as an interim system to transfer, hold, and filter the Reactor Cavity pool volume of water whenever the reactor head bolts are required to be loosened or tightened during an outage. The LWM then transfers the volume of water to the Refuelling Water Storage Tank (RWST).

The LWM, through the CST, also performs a safety function to provide an alternative source of water for the Control Rod Drive (CRD) system should the Condensate and Feedwater System not be available. The LWM SSCs are Safety Class 3 as they serve a Defence Line 2 function to confine radioactive materials during normal and abnormal operating conditions.

The LWM is designed to have the capability to process the maximum anticipated quantities of liquid waste without impairing the operation of the BWRX-300 plant during normal and anticipated operational occurrences, in accordance with the requirements of REGDOC-2.5.2.

During normal operation, potential radioactive contaminants are removed from the liquid through purification and filtration stages, and returned to the CST if the treated water meets condensate quality specifications. If the CST inventory is too much to permit storage and reuse, the treated effluent can be discharged to the environment. The Shutdown Cooling System and the Reactor Coolant Cleanup Water System also provide some flow to the LWM in certain Shutdown Cooling

System or Cleanup Water system operating modes. OPG has stated that the LWM is sized such that during normal operational conditions, there would be no need to release liquid effluent to the environment.

Discharges to the environment, though expected to be rare, will be monitored by the Process Radiation Monitoring Subsystem to ensure compliance with prescribed limits calculated based on CSA N288.1 – *Guidelines for Modelling Radionuclide Environmental Transport, Date, and Exposure Associated with the Normal Operation of Nuclear Facilities* and N288.5 – *Effluent and Emissions Monitoring Programs at Nuclear Facilities* [R2.8-4] expectations. OPG will be required to comply with applicable environmental protection regulatory requirements for any liquid discharges to the environment, in accordance with the *General Nuclear Safety and Control Regulations* and the *Radiation Protection Regulations*.

CNSC staff have determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. OPG will be required to provide additional detailed information related to the design and operation of the LWM system, including information regarding the potential for discharge of treated liquid effluents to the environment.

A.2.5.11.2 Systems for the Management of Gaseous Radioactive Wastes

Subsection 11.3 of the PSAR describes the system in place for the management of gaseous radioactive wastes. The BWRX-300 reactor includes an Offgas System (OGS) intended to process and control the release of any gaseous radioactive effluent to the environment to a level that is ALARA and in compliance with the *Radiation Protection Regulations*.

The OGS also is designed to recombine hydrogen and oxygen back into water vapour to be routed back to the main condenser, and to provide carbon adsorption to reduce concentrations of fission product gases in any gaseous effluents released to the environment. The OGS is designed to minimise the release of radioactive materials by delaying and filtering the offgases from the Main Condenser and Auxiliaries system, and removing any potential radioisotopes such as krypton, xenon, radioiodines, hydrogen, nitrogen, and oxygen.

CNSC staff have determined that OPG has provided sufficient information to support a recommendation that the Commission issue a licence to construct. OPG will be required to provide additional detailed information related to the design and operation of the OGS system as the design progresses.

A.2.5.12 Fire Safety and Fire Protection Systems

Subsection 7.12, *Fire Safety*, of REGDOC-2.5.2 outlines expectations that the design of the nuclear facility includes provisions for fire safety. The design is expected to incorporate operational procedures, redundant SSCs, physical barriers, spatial and fire separation, and fail-safe design provisions to achieve fire safety objectives. Fire suppression systems shall also be design and located such that their

rupture or spurious activation will not impair the capability of SSCs important to safety.

OPG has conducted Fire Protection Assessments (FPA) that document the fire safety measures to be implemented to meet fire safety objectives. These assessments contain companion documentation to demonstrate fire safety design adequacy at the DNNP plant, such as the Fire Hazards Assessment (FHA), the Fire-Safe Shutdown Analysis (FSSA), and the Code Compliance Review (CCR).

OPG also provided NK054-REP-01210-00169 – *BWRX-300 Darlington New Nuclear Project (DNNP) Independent Third-Party Review Report of Preliminary Fire Protection Design* for CNSC staff review, as required by CSA N293 and REGDOC-1.1.2.

CNSC staff reviewed OPG's FPA documentation and concluded that it contains an overview of requirements and details OPG's commitments to meet regulatory expectations; however, lacks details on proposed alternatives or performance-based measures. In particular, the Code Compliance Review (CCR) provides information about how the BWRX-300 plant will comply with the design and installation requirements for fire protection systems; however, lacks details. OPG has committed to provide revised FPA documentation as the design progresses, as outlined in Appendix D.2 – *Summary List of BWRX-300 Licensing Regulatory Commitments for Construction*.

A.2.5.12.1 Fire Safe Shutdown Assessment

OPG's Fire Safe Shutdown Assessment (FSSA), documented in NK054-REP-01210-00147 – *BWRX-300 Darlington New Nuclear Project (DNNP) Preliminary Fire Safe Shutdown Requirement and Analysis* [R2.5-55], provides a documented review of the safety-related shutdown circuits in each fire assessment zone, to confirm that the reactor's shutdown capability is not impacted by a fire in any single zone. CNSC staff have noted several comments in the review of the FSSA, summarised briefly below.

The assessment was developed based on the methodology defined in CSA N293 and Nuclear Energy Institute (NEI) guidance 00-01 – *Guidance for Post Fire Safe Shutdown Circuit Analysis* [R2.5-56]. The FSSA ensures that fire protection features used to protect SSCs important to safe shutdown are designed to minimise damage so that "*one train of systems necessary to achieve and maintain stable shutdown conditions—from either the control room or emergency control station(s)—is free from fire damage.*"

OPG states that the defence-in-depth principle has been used to achieve a high degree of fire protection by providing redundancy, diversity, and balance in the selection and implementation of fire protection measures. CNSC staff note that the supporting analyses and assessments on the implementation of the defence-in-depth principle with respect to the fire protection system design in all plant areas has not

been provided. As outlined in Appendix D.2, OPG has committed to providing this information.

As the design progress, the FSSA will be updated to address additional design details, uncertainties in plant design, and to include additional fire safe shutdown tasks that are currently only addressed qualitatively, or are not included in the initial revisions of the FSSA report.

OPG states that the BWRX-300 has three independent divisions of safety-related safe shutdown equipment, each separated by fire barriers, and therefore does not require analysis for alternative shutdown capability for postulated fires outside of containment and the control room. OPG has also claimed that the results of the preliminary FSSA show that the BWRX-300 plant is safe with respect to internal fire events, due to the passive safety features inherent to the design. CNSC staff note that OPG has not provided a detailed FSSA to substantiate these statements but has committed to provide this submission as outlined in Appendix D.2.

A.2.5.12.2 Fire Hazard Assessment

The objective of an FHA is to identify specific fire hazards and fire protection capabilities in each area of the plant, to demonstrate that any potential damage will be limited by active or passive protective measures, such that fire protection goals are achieved.

The largest fire protection water flow rate for the BWRX-300 plant is anticipated to be the simultaneous operation of a turbine under-floor system and the turbine bearing system fire suppression, including hose streams. Fire water will be provided via two 100%-capacity storage tanks, and the intent is to provide make-up supply using the municipal system, in accordance with CSA N293.

Buildings within the protected area are supplied with fire protection water from the fire pumps and tanks within the area. OPG states that three 60%-capacity fire pumps are recommended and are to be separated from each other and from unrelated equipment and areas using 3-hour rated fire barriers. This configuration will require two fire pumps running simultaneously to meet the design capacity, with a third pump acting in standby.

Fire hydrants are located along the firewater supply system loop at spacings not exceeding 75 metres and located no closer than 12 metres from the buildings.

OPG has provided room descriptions and datasheets that present information such as the type and anticipated range for combustible fuel loading, fire suppression and fire alarm systems, as well as generic descriptions of the design fire basis. OPG has committed to provide detailed supporting analyses or specific postulated design fires.

A.2.5.12.3 Fire Protection System Code Compliance Review

OPG has conducted a preliminary Fire Protection System Code Compliance Review (CCR) that reviews the CSA N293 standard, the *National Building Code of Canada 2020 (NBCC)* [R2.5-24], and the *National Fire Code of Canada 2020 (NFCC)* [R2.5-33], to identify design requirements applicable to each building of the BWRX-300 plant. This CCR also includes a review of other applicable codes and standards. CNSC staff noted several observations in the review of the CCR, briefly summarised below.

OPG has indicated that spatial separation is not used in the design of the BWRX-300 plant. The review of spatial separation with respect to the safe shutdown assessment will be performed in the detailed design under the Fire-Safe Shutdown Analysis (FSSA), documented in NK054-REP-01210-00147 – *BWRX-300 Darlington New Nuclear Project Preliminary Fire Safe Shutdown Requirement and Analysis* [R2.5-55]. The FSSA also describes the crediting of redundant safe shutdown equipment trains using credited fire barriers, except for the containment structure and the main control room.

OPG has not identified redundant safe shutdown equipment trains identified in the same room, except for the control room. OPG indicated that this will be addressed as the detailed design is completed, and that the requirement to appropriately separate redundant fire-safe shutdown systems, co-located in the same fire compartment, will also be reviewed in the FSSA. CNSC staff will review OPG's submissions on this topic as the design progresses.

The current fire protection program at the Darlington Nuclear Generating Station (DNGS) will be applied to the BWRX-300, with the reactor added to the fire protection plan, including processes and procedures associated with fire response capability.

A.2.5.13 Ageing Management

Subsection 7.17, *Aging and Wear*, of REGDOC-2.5.2 outlines expectations that the design of the nuclear facility consider the effects of ageing and wear on SSCs important to safety.

Subsection 3.1.12, *Design Considerations for Ageing Management*, of the PSAR provides an overview of how the BWRX-300 design complies with the regulatory expectations of REGDOC-2.5.2 and REGDOC-2.6.3 – *Ageing Management* [R2.5-57]. OPG has submitted that ageing of SSCs has been considered in the basic design assumptions and in input data to the safety, thermal-hydraulic, and stress analyses. System and component design specifications include references to ageing design requirements.

Further information on ageing management and design criteria for structures, mechanical systems, electrical systems, instrumentation and control systems,

equipment qualification, and in-service monitoring is provided in subsections 3.3 to 3.10 of the PSAR.

The PSAR also highlights specific details incorporated into the design for PRSCs to accommodate ageing of components and structures. The BWRX-300 nuclear boiler system uses proven materials and processes that meet requirements specified in ASME Section III, Division 1. Material and process control requirements for pressure boundary components are defined to ensure reliability of plant operations throughout its design life, by minimising irradiation of plant components, corrosion products, and mitigating degradation of materials. Subsection A.2.5.4.6 – *Reactor Materials* provides further information on the materials and process control methodologies employed with the BWRX-300.

Significant operating experience exists regarding BWR degradation mechanisms. These are reflected in ageing management and surveillance programs and are considered in subsection 3.9 of the PSAR as part of establishing environmental qualification for specific service conditions and evaluating the qualified life of SSCs. Equipment included within the scope of the EQ program is analysed based on an expected plant life of 60 years or is subject to periodic evaluation and replacement as necessary. OPG's application references the USNRC approach to ageing management as well as the IAEA's International Generic Ageing Lessons Learned program.

The Design for Reliability program (D-RAP), implemented as part of a Reliability, Availability, Maintainability, and Inspectability (RAMI) program, provides an overall process for consideration of essential ageing and wear mechanisms in design. This process includes a Failure Modes and Effects Analysis (FMEA) and includes an evaluation of time-limiting-ageing-analyses for long-lived Safety Class 1 and 2 components not easily replaceable.

Appendix B BASIS FOR THE RECOMMENDATION(S)

B.1 TECHNICAL BASIS

The technical basis for the recommendations presented in this CMD are based on codes and standards from national and international organisations and are listed by SCA in the subsections below.

B.1.1 Management System

The technical basis for the recommendations for the Management System SCA are based on codes and standards from national and international organisations and are listed below.

- CSA N286 – *Management System Requirements for Nuclear Facilities (2012)*
- CSA N286.7 – *Quality Assurance of Analytical, Scientific, and Design Computer Programs for Nuclear Power Plants*
- CSA N286.10 – *Configuration Management for High-Energy Reactor Facilities*
- CSA N290.12 – *Human Factors in Design for Nuclear Power Plants*
- CSA N299.1 – *Quality Assurance Program Requirements for Supply of Items and Services for Nuclear Power Plants, Category 1*

B.1.2 Human Performance Management

The technical basis for the recommendations for the Human Performance Management SCA are based on codes and standards from national and international organisations and are listed below.

- CSA N290.12 – *Human Factors in Design for Nuclear Power Plants*

B.1.3 Operating Performance

The technical basis for the recommendations for the Operating Performance SCA are based on codes and standards from national and international organisations and are listed below.

- CSA N290.15 – *Requirements for the Safe Operating Envelope of Nuclear Power Plants (2019)*

B.1.4 Safety Analysis

The technical basis for the recommendations for the Safety Analysis SCA are based on codes and standards from national and international organisations and are listed below.

- CNSC REGDOC-1.1.1 – *Site Evaluation and Site Preparation for New Reactor Facilities (version 1.2).*

- Environment and Climate Change Canada, *Technical Guide for Strategic Assessment of Climate Change: Assessing Climate Change Resilience*, published in March 2022.
- Ontario Ministry of Natural Resources (OMNR), *Lakes and Rivers Improvement Act Technical Guidelines* (June 2004 edition).
- CSA N286.7 – *Quality Assurance of Analytical, Scientific, and Design Computer Programs* (2016 edition, reaffirmed 2021)
- CSA N288.2 – *Guidelines for Calculating the Radiological Consequences to the Public of a Release of Airborne Radioactive Material for Nuclear Reactor Accidents* (2019 edition)
- CSA N288.6 – *Environmental Risk Assessment at Class I Nuclear Facilities and Uranium Mines and Mills*
- CSA N289.1 – *General Requirements for Seismic Design and Qualification of Nuclear Power Plants* (2018 edition, reaffirmed in 2023).
- CSA N290.14 – *Qualification of Digital Hardware and Software for Use in Instrumentation and Control Applications for Nuclear Power Plants* (2015 edition).
- CSA N290.17 – *Probabilistic Safety Assessment for Nuclear Power Plants* (2017 edition).
- CSA N293 – *Fire Protection for Nuclear Power Plants* (2012 edition, reaffirmed in 2017).
- NUREG-0800 – *Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition* (United States Nuclear Regulatory Commission)
- IAEA TECDOC-1752 – *Progress in Methodologies for the Assessment of Passive Safety System Reliability in Advanced Reactors*, published in 2014.
- IAEA SSG-3 – *Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants*.
- IAEA SSG-4 – *Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants*.
- IAEA SSG-18 – *Meteorological and Hydrological Hazards in Site Evaluation for Nuclear Installations*.
- IAEA SSG-61 – *Format and Content of the Safety Analysis Report for Nuclear Power Plants*, published in 2021.
- IAEA INSAG-10 – *Defence in Depth in Nuclear Safety*.
- USNRC RG 1.200 – *Acceptability of Probabilistic Risk Assessment Results for Risk-Informed Activities* (revision 3).

- American Society of Mechanical Engineers standard, RA-S-1.4 – *Probabilistic Risk Assessment Standard for Advanced Non-Light Water Reactor Nuclear Power Plants* (2021 edition).
- ASME/ANS RA-SB-2013 – *Standard for Level 1 / Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications (Addenda to ASME/ANS RA-S-2008)*.
- ASME/ANS RA-S-1.2-2019 – *Severe Accident Progression and Radiological Release (Level 2) PRA Standard for Light Water Reactors*.
- International Standards Organisation (ISO) standard, 16117 – *Nuclear Criticality Safety: Estimation of the Number of Fissions of a Postulated Criticality Accident*

B.1.5 Physical Design

The technical basis for the recommendations for the Physical Design SCA are based on codes and standards from national and international organisations and are listed below.

- Government of Ontario *Water Management: Policies, Guidelines, and Provincial Water Quality Objectives*
- Government of Ontario *Soil, Groundwater and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act*
- American Society of Mechanical Engineers (ASME) *Boiler Pressure and Vessel Code*
- ASME *Boiler and Pressure Vessel Code* (2021 edition).
- ASME B31.1 – *Power Piping*
- NSA N285.0 – *General Requirements for Pressure-Retaining Systems and Components in CANDU Nuclear Power Plants* (2017 edition)
- CSA N286.10 – *Configuration Management for High-Energy Reactor Facilities*
- CSA N287.1 – *General Requirements for Concrete Containment Structures for Nuclear Power Plants*
- CSA N290.13 – *Environmental Qualification of Equipment for CANDU Nuclear Power Plants* (2018 edition)
- CSA N289.1 – *General Requirements for Seismic Design and Qualification of Nuclear Power Plants* (2018 edition)
- CSA N289.2 – *Ground Motion Determination for Seismic Qualification of Nuclear Power Plants* (2021 edition)
- CSA N289.3 – *Design Procedures for Seismic Qualification of Nuclear Power Plants* (2020 edition)
- CSA N289.4 – *Testing Procedures for Seismic Qualification of Nuclear Power Plant Structures, Systems, and Components* (2012 edition, reaffirmed 2022)

- CSA N289.5 – *Seismic Instrumentation Requirements for Nuclear Power Plants and Nuclear Facilities*
- CSA N290.0 – *General Requirements for Safety Systems of Nuclear Power Plants* (2017 edition)
- CSA N290.9 – *Reliability and Maintenance Programs for Nuclear Power Plants* (2019 edition).
- CSA N290.12 – *Human Factors in Design for Nuclear Power Plants* (2014, reaffirmed 2019)
- CSA N290.13 – *Environmental Qualification of Equipment for Nuclear Power Plants* (2018)
- CSA N290.14 – *Qualification for Digital Hardware and Software for Use in Instrumentation and Control Applications for Nuclear Power Plants* (2015 edition, reaffirmed in 2020).
- CSA N291 – *Requirements for Safety-Related Structures for Nuclear Power Plants* (2019 edition)
- CSA N293 – *Fire Protection for Nuclear Power Plants*
- CSA N293-S1 – *Supplement No. 1 to N293-12: Fire Protection for Nuclear Power Plants (Application to Small Modular Reactor)*
- IAEA NS-G-1.13 – *Radiation Protection Aspects of Design for Nuclear Power Plants*
- IAEA INSAG-10 – *Defence in Depth in Nuclear Safety*
- IAEA SSG-63 – *Design of Fuel Handling and Storage Systems for Nuclear Power Plants*.
- IAEA *SSG-73 – Core Management and Fuel Handling for Nuclear Power Plants*.
- IEC 63147 – *Criteria for Accident Monitoring Instrumentation for Nuclear Power Generating Stations* (2017 edition)
- IEC 61513 – *Nuclear Power Plants: Instrumentation and Control Important to Safety: General Requirements for Systems*
- IEC 60709 – *Nuclear Power Plants: Instrumentation, Control, and Electrical Power Systems Important to Safety – Separation*
- IEEE 497 – *IEEE Standard Criteria for Accident Monitoring Instrumentation for Nuclear Power Generating Stations* (2016 edition)
- *National Building Code of Canada* (2020 edition)
- *National Fire Code of Canada* (2020 edition)
- Ontario Regulation, O. Reg 332 – *Ontario Building Code* (2020 edition)

- United States Code of Federal Regulations Title 10 Chapter 50 – *Domestic Licensing of Production and Utilization Facilities*.
- USNRC RG 1.26 – *Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants* (Revision 6).
- USNRC RG 1.183 – *Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors*
- USNRC RG 1.143 – *Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water Cooled Nuclear Power Plants*.
- USNRC NUREG-0800 / BTP 3-4 – *Postulated Rupture Locations in Fluid System Piping Inside and Outside Containment* (revision 2).

B.1.6 Fitness for Service

The technical basis for the recommendations for the Fitness for Service SCA are based on codes and standards from national and international organisations and are listed below.

- Not applicable.

B.1.7 Radiation Protection

The technical basis for the recommendations for the Radiation Protection SCA are based on codes and standards from national and international organisations and are listed below.

- None.

B.1.8 Conventional Health and Safety

The technical basis for the recommendations for the Conventional Health and Safety SCA are based on codes and standards from national and international organisations and are listed below.

- Royal Statutes of Ontario, R.S.O 1990, Chapter O.1 – *Occupational Health and Safety Act*.

B.1.9 Environmental Protection

The technical basis for the recommendations for the Environmental Protection SCA are based on codes and standards from national and international organisations and are listed below.

- CSA N288.1 – *Guidelines for Modelling Radionuclide Environmental Transport, Fate, and Exposure Associated with the Normal Operation of Nuclear Facilities* (2020 edition).

- CSA N288.4 – *Environmental Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills* (2019)
- CSA N288.5 – *Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills* (2022)
- CSA N288.6 – *Environmental Risk Assessments at Nuclear Facilities and Uranium Mines and Mills* (2012, reaffirmed 2017)
- CSA N288.7 – *Groundwater Protection Programs at Class I Nuclear Facilities and Uranium Mines and Mills* (2015, reaffirmed 2020)
- CSA N288.9 – *Guideline for Design of Fish Impingement and Entrainment Programs at Nuclear Facilities* (2018, reaffirmed 2023).
- Royal Statutes of Ontario, *Environmental Protection Act*, R.S.O. 1990, c. E.19 (July 2022 edition).
- Royal Statutes of Ontario, *Ontario Water Resources Act*, R.S.O. 1990, c. O.40 (June 2021 edition).

B.1.10 Emergency Management and Fire Protection

The technical basis for the recommendations for the Emergency Management and Fire Protection SCA are based on codes and standards from national and international organisations and are listed below.

- CSA N293 – *Fire Protection for Nuclear Power Plants*
- CSA N293S1 – *Supplement #1 to CSA N293 – Fire Protection for Nuclear Power Plants*
- CSA N1600 – *General Requirements for Nuclear Emergency Management Programs* (2021 edition)
- Government of Ontario, *Provincial Nuclear Emergency Response Plan (PNERP) Master Plan* (2017 edition).

B.1.11 Waste Management

The technical basis for the recommendations for the Waste Management SCA are based on codes and standards from national and international organisations and are listed below.

- CSA N294 – *Decommissioning of Facilities Containing Nuclear Substances* (2009 edition, reaffirmed in 2019).

B.1.12 Security

The technical basis for the recommendations for the Security SCA are based on codes and standards from national and international organisations and are listed below.

- None.

B.1.13 Safeguards and Non-Proliferation

The technical basis for the recommendations for the Safeguards and Non-Proliferation SCA are based on codes and standards from national and international organisations and are listed below.

- None

Appendix C SAFETY AND CONTROL AREA FRAMEWORK

C.1 SAFETY AND CONTROL AREAS DEFINED

The safety and control areas identified and discussed in summary in subsections 2.1 through to 2.12 are comprised of specific areas of regulatory interest which vary between facility types.

The following table provides a high-level definition of each SCA. The specific areas within each SCA are identified throughout the respective subsections within Section 2 .

Table C-1: Definitions of Safety and Control Areas

SAFETY AND CONTROL AREA FRAMEWORK		
Functional Area	**Safety and Control Area**	**Definition**
Management	Management System	Covers the framework which establishes the processes and programs required to ensure an organization achieves its safety objectives and continuously monitors its performance against these objectives and fostering a healthy safety culture.
	Human Performance Management	Covers activities that enable effective human performance through the development and implementation of processes that ensure that a sufficient number of licensee personnel are in all relevant job areas and have the necessary knowledge, skills, procedures and tools in place to safely carry out their duties.
	Operating Performance	Includes an overall review of the conduct of the licensed activities and the activities that enable effective performance.
Facility and Equipment	Safety Analysis	Covers maintenance of the safety analysis that supports that overall safety case for the facility. Safety analysis is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or facility and considers the effectiveness of preventive measures and strategies in reducing the effects of such hazards.

SAFETY AND CONTROL AREA FRAMEWORK		
Functional Area	**Safety and Control Area**	**Definition**
	Physical Design	Relates to activities that impact on the ability of systems, components and structures to meet and maintain their design basis given new information arising over time and taking changes in the external environment into account.
Core Control Processes	Radiation Protection	Covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations*. This program must ensure that contamination levels and radiation doses received by individuals are monitored and controlled and maintained ALARA.
	Conventional Health and Safety	Covers the implementation of a program to manage workplace safety hazards and to protect workers.
	Environmental Protection	Covers programs that identify, control and monitor all releases of radioactive and hazardous substances and effects on the environment from facilities or as the result of licensed activities.
	Emergency Management and Fire Protection	Covers emergency plans and emergency preparedness programs which exist for emergencies and for non-routine conditions. This also includes any results of participation in exercises.
	Waste Management	Covers internal waste-related programs which form part of the facility's operations up to the point where the waste is removed from the facility to a separate waste management facility. This area also covers the planning for decommissioning.
	Security	Covers the programs required to implement and support the security requirements stipulated in the regulations, the licence, orders, or expectations for the facility or activity.

SAFETY AND CONTROL AREA FRAMEWORK		
Functional Area	**Safety and Control Area**	**Definition**
	Safeguards and Non-Proliferation	Covers the programs and activities required for the successful implementation of the obligations arising from the Canada/International Atomic Energy Agency (IAEA) safeguards agreements, as well as all other measures arising from the *Treaty on the Non-Proliferation of Nuclear Weapons*.

C.2 SPECIFIC AREAS FOR THIS FACILITY

The following table identifies the specific areas that comprise each SCA for the DNNP:

Table C-2: Specific Areas for Nuclear Power Plants Applicable to the DNNP for Construction

Specific Areas for Construction of Nuclear Power Plants		
Functional Area	**Safety and Control Area**	**Specific Areas**
Management	Management System	▪ Management System ▪ Organization ▪ Change Management ▪ Safety Culture ▪ Configuration Management ▪ Records Management ▪ Supply and Contractor Management ▪ Business Continuity
Management	Human Performance Management	▪ Human Performance Programs ▪ Personnel Training ▪ Personnel Certification ▪ Work Organization and Job Design ▪ Fitness for Duty
Management	Operating Performance	▪ Conduct of Licensed Activity ▪ Procedures ▪ Reporting and Trending ▪ Safe Operating Envelope ▪ Maintenance ▪ Structural Integrity ▪ Aging Management ▪ Chemistry Control
Facility and Equipment	Safety Analysis	▪ Deterministic Safety Analysis ▪ Hazard Analysis ▪ Probabilistic Safety Analysis ▪ Criticality Safety ▪ Severe Accident Analysis

Specific Areas for Construction of Nuclear Power Plants		
Functional Area	**Safety and Control Area**	**Specific Areas**
Facility and Equipment	Physical Design	▪ Design Governance ▪ Site Characterisation ▪ Facility Design ▪ Structure Design ▪ System Design ▪ Components Design
Core Control Processes	Radiation Protection	▪ Application of ALARA ▪ Worker Dose Control ▪ Radiation Protection Program Performance ▪ Radiological Hazard Control
Core Control Processes	Conventional Health and Safety	▪ Performance ▪ Practices ▪ Awareness
Core Control Processes	Environmental Protection	▪ Effluent and Emissions Control (releases) ▪ Environmental Management System (EMS) ▪ Assessment and Monitoring ▪ Protection of People ▪ Environmental Risk Assessment
Core Control Processes	Emergency Management and Fire Protection	▪ Conventional Emergency Preparedness and Response ▪ Nuclear Emergency Preparedness and Response ▪ Fire Emergency Preparedness and Response
Core Control Processes	Waste Management	▪ Waste Characterisation ▪ Waste Minimization ▪ Waste Management Practices ▪ Decommissioning Plans
Core Control Processes	Security	▪ Facilities and Equipment ▪ Response Arrangements ▪ Security Practices ▪ Cyber security

Specific Areas for Construction of Nuclear Power Plants		
Functional Area	**Safety and Control Area**	**Specific Areas**
Core Control Processes	Safeguards and Non-Proliferation	▪ Nuclear Material Accountancy and Control ▪ Access and Assistance to the IAEA ▪ Operational and Design Information ▪ Safeguards Equipment, Containment and Surveillance ▪ Import and Export

Appendix D SUPPORTING DETAILS

D.1 STATUS OF OPG DNNP COMMITMENTS

JRP Recommendations directed to OPG are documented and managed through the OPG DNNP Commitments Report [R1-6]. The corresponding DNNP Commitments Report reference numbers are included in the table below, where applicable. Where a JRP Recommendation is not directed to OPG, the Commitments Report column indicates this number is not applicable.

The JRP Recommendations span the lifecycle of the DNNP, with some Recommendations applicable at the site preparation, construction, and operation licence phases. All JRP Recommendations not directed to OPG are managed under the CNSC's regulatory program for DNNP.

For all JRP Recommendations, the GOC Response sets the criteria for how to meet the recommendations and by which accountable organisation. The GOC either accepted the recommendation as-is or accepted the intent of the recommendation with clarifications in their response. In some instances, the GOC response noted where recommendations were directed to other levels of government or clarified where statutory authority and powers rest.

Table D-1 - Status of Joint Review Panel Recommendations

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
1	The Panel understands that prior to construction, the Canadian Nuclear Safety Commission will determine whether this environmental assessment is applicable to the reactor technology selected by the Government of Ontario for the Project. Nevertheless, if the selected reactor technology is fundamentally different from the specific reactor technologies bounded by the Plant Parameter Envelope, the Panel recommends that a new environmental assessment be conducted.	The Government of Canada accepts the intent of this recommendation, but acknowledges that any RA under the CEAA will need to determine whether the future proposal by the proponent is fundamentally different from the specific reactor technologies assessed by the JRP and if a new EA is required under the CEAA.	N/A	Closed

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
2	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission require OPG to conduct a comprehensive soils characterisation program. In particular, the potentially impacted soils in the areas OPG identifies as the spoils disposal area, cement plant area and asphalt storage area must be sampled to identify the nature and extent of potential contamination.	The Government of Canada accepts the recommendation to require OPG to conduct a comprehensive soils characterisation program. The Government of Canada also notes that the recommended soils characterisation program could also support future ecological risk assessment activities by OPG. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-3.6	Closed
3	The Panel recommends that the Canadian Nuclear Safety Commission require that as part of the Application for a Licence to Construct a reactor, OPG must undertake a formal quantitative cost-benefit analysis for cooling tower and once-through condenser cooling water systems, applying the principle of best available technology economically achievable. This analysis must take into account the fact that lake infill should not go beyond the two-metre depth contour and should include cooling tower plume abatement technology.	The Government of Canada accepts the intent of this recommendation to require OPG to conduct a formal quantitative cost-benefit analysis for cooling tower and once-through condenser cooling water systems, as recommended, but acknowledges that this analysis may be required earlier than indicated in the recommendation given the relationship between site layout and the choice of condenser cooling technology. Fisheries and Oceans Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The Government of Canada further acknowledges the connection of this Recommendation with Panel Recommendation #31 and as such notes that Fisheries and Oceans Canada will work with OPG to ensure through its regulatory process and conditions of authorization under the	D-C-1.1	Closed

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
		Fisheries Act that any Harmful Alteration, Disruption and Destruction (HADD) is limited to the 2 metre depth contour of Lake Ontario.		
4	The Panel recommends that the Canadian Nuclear Safety Commission exercise regulatory oversight to ensure that OPG complies with all municipal and provincial requirements and standards over the life of the Project. This is of particular importance because the conclusions of the Panel are based on the assumption that OPG will follow applicable laws and regulations at all jurisdictional levels.	The Government of Canada accepts this recommendation, however, recognizes that it is the responsibility of provincial and municipal officials to ensure compliance with their own requirements and standards over the life of the Project.	N/A	Closed
5	To avoid any unnecessary environmental damage to the bluff at Raby Head and fish habitat, the Panel recommends that no bluff removal or lake infill occur during the site preparation stage, unless a reactor technology has been selected and there is certainty that the Project will proceed.	The Government of Canada accepts this recommendation to avoid any unnecessary environmental damage to the bluff at Raby Head and fish habitat as recommended. Fisheries and Oceans Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The Government of Canada further notes that authorization under the Fisheries Act will be required prior to any lake infill taking place, and confirms that Fisheries and Oceans Canada will work with OPG to ensure that as a condition of that authorization, that no lake infill occurs unless there is certainty that the Project will proceed and appropriate mitigation measures and habitat compensation have been implemented.	D-P-14.1	Open
			D-P-16.1	Open
			D-P-3.8	Open

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
6	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission require OPG to update its preliminary decommissioning plan for site preparation in accordance with the requirements of Canadian Standards Association (CSA) Standard N294-09. The OPG preliminary decommissioning plan for site preparation must incorporate the rehabilitation of the site to reflect the existing biodiversity in the event that the Project does not proceed beyond the site preparation phase. OPG shall prepare a detailed preliminary decommissioning plan once a reactor technology is chosen, to be updated as required by the Canadian Nuclear Safety Commission.	The Government of Canada accepts the intent of the recommendation to require OPG to maintain a preliminary decommissioning plan for site preparation in accordance with the requirements of CSA Standard N294-09, which provides direction on the decommissioning of licensed facilities and activities consistent with Canadian and international recommendations. The Government of Canada accepts the recommendation to require OPG to revise the preliminary decommissioning plan once a reactor technology is selected.	D-P-13.1	Closed
7	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission require that OPG establish a decommissioning financial guarantee to be reviewed as required by the Canadian Nuclear Safety Commission. Regarding the decommissioning financial guarantee for the site preparation stage, the Panel recommends that this financial guarantee contain sufficient funds for the rehabilitation of the site in the event the Project does not proceed beyond the site preparation stage.	The Government of Canada accepts the intent of this recommendation to require OPG to establish a financial guarantee for the site preparation stage, however, notes that the financial guarantee must be sufficient to cover the cost of decommissioning work outlined in the preliminary decommissioning plan referenced in Recommendation #6.	D-P-13.2	Closed
8	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission require OPG to develop a follow-up and adaptive management program for air contaminants such as Acrolein, NO2, SO2, SPM, PM2.5 and PM10, to the satisfaction of the Canadian Nuclear Safety Commission, Health Canada and Environment Canada. Additionally, the	The Government of Canada accepts this recommendation to require OPG to develop a follow-up and adaptive management program for air contaminants and a smog alert action plan. Health Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety	D-P-12.2 D-P-3.10	Closed Closed

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	Canadian Nuclear Safety Commission must require OPG to develop an action plan acceptable to Health Canada for days when there are air quality or smog alerts.	Commission, to assist in the implementation of this recommendation.		
9	The Panel recommends that the Canadian Nuclear Safety Commission, in collaboration with Health Canada, require OPG to develop and implement a detailed acoustic assessment for all scenarios evaluated. The predictions must be shared with potentially affected members of the public. The OPG Nuisance Effects Management Plan must include noise monitoring, a noise complaint response mechanism and best practices for activities that may occur outside of municipal noise curfew hours to reduce annoyance that the public may experience.	The Government of Canada accepts this recommendation to require OPG to develop and implement a detailed acoustic assessment. Health Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, to assist in the implementation of this recommendation.	D-P-3.2	Closed
10	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to undertake a detailed site geotechnical investigation prior to commencing site preparation activities. The geologic elements of this investigation should include, but not be limited to: • collection of site-wide information on soil physical properties; • determining the mechanical and dynamic properties of overburden material across the site; • mapping of geological structures to improve the understanding of the site geological structure model; • confirming the lack of karstic features in the local bedrock at the site; and	The Government of Canada accepts the intent of this recommendation to require OPG to undertake a detailed site geotechnical investigation, however, notes that this investigation may be performed concurrently with site preparation activities. Natural Resources Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-9.1 D-P-9.2	Closed Closed

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	• confirming the conclusions reached concerning the liquefaction potential in underlying granular materials.			
11	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to develop and implement a follow-up program for soil quality during all stages of the Project.	The Government of Canada accepts this recommendation to require OPG to develop and implement a follow-up program for soil quality. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-12.6	Closed
12	The Panel recommends that before in-water works are initiated, the Canadian Nuclear Safety Commission require OPG to collect water and sediment quality data for any future embayment area that may be formed as a consequence of shoreline modifications in the vicinity of the outlet of Darlington Creek. This data should serve as the reference information for the proponent's post-construction commitment to conduct water and sediment quality monitoring of the embayment area.	The Government of Canada accepts this recommendation to require OPG to collect water and sediment quality data for any future embayment area. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The Government of Canada notes that authorization under the Fisheries Act will be required prior to in-water works. Prior to the issuance of an authorization, Fisheries and Oceans Canada will require a water and sediment quality monitoring program. This program is required to assess whether OPG continues to meet the intent of section 36 of the Fisheries Act.	D-P-12.3	Open

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
13	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to collect and assess water quality data for a comprehensive number of shoreline and offshore locations in the site study area prior to commencing in-water works. This data should be used to establish a reference for follow-up monitoring.	The Government of Canada accepts the intent of this recommendation to require OPG to collect and assess water quality data for a comprehensive number of shoreline and offshore locations in the site study area prior to commencing in-water works, and would further support the collection of sediment quality data as part of a comprehensive program. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The Government of Canada notes that authorization under the Fisheries Act will be required prior to in-water works. Prior to the issuance of an authorization, Fisheries and Oceans Canada will require a water and sediment quality monitoring program. This program is required to assess whether OPG continues to meet the intent of section 36 of the Fisheries Act.	D-P-12.3	Open
14	The Panel recommends that following the selection of a reactor technology for the Project, the Canadian Nuclear Safety Commission require OPG to conduct a detailed assessment of predicted effluent releases from the Project. The assessment should include but not be limited to effluent quantity, concentration, points of release and a description of effluent treatment, including demonstration that the chosen option has been designed to achieve best available treatment technology and techniques economically	The Government of Canada accepts this recommendation to require OPG to conduct a detailed assessment of predicted effluent releases from the Project, as recommended. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-C-2.1	Open
			D-C-4.1	Open
			D-P-12.9	Closed

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	achievable. The Canadian Nuclear Safety Commission shall also require OPG to conduct a risk assessment on the proposed residual releases to determine whether additional mitigation measures may be necessary.			
15	The Panel recommends that following the start of operation of the reactors, the Canadian Nuclear Safety Commission require OPG to conduct monitoring of ambient water and sediment quality in the receiving waters to ensure that effects from effluent discharges are consistent with predictions made in the environmental impact statement and with those made during the detailed design phase.	The Government of Canada accepts this recommendation to require OPG to conduct monitoring of ambient water and sediment quality in the receiving waters as recommended. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The Government of Canada notes that authorization under the Fisheries Act will be required prior to in-water works. Prior to the issuance of an authorization, Fisheries and Oceans Canada will require a water and sediment quality monitoring program. This program is required to assess whether OPG continues to meet the intent of section 36 of the Fisheries Act.	D-P-12.3	Open
16	The Panel recommends that prior to the start of construction, the Canadian Nuclear Safety Commission require the proponent to establish toxicity testing criteria and provide the test methodology and test frequency that will be used to confirm that stormwater discharges from the new nuclear site comply with requirements in the Fisheries Act.	The Government of Canada accepts the intent of this recommendation to require the proponent to establish toxicity testing criteria and provide the test methodology and test frequency for stormwater. The Government of Canada would additionally support the application of this recommended testing for process effluents. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety	D-C-2.1	Open
			D-P-3.4	Closed

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
		Commission, upon request, to assist in the implementation of this recommendation.		
17	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to provide an assessment of the ingress and transport of contaminants in groundwater on site during successive phases of the Project as part of the Application for a Licence to Construct. This assessment shall include consideration of the impact of wet and dry deposition of all contaminants of potential concern and gaseous emissions on groundwater quality. OPG shall conduct enhanced groundwater and contaminant transport modelling for the assessment and expand the modelling to cover the effects of future dewatering and expansion activities at the St. Marys Cement quarry on the Project.	The Government of Canada accepts this recommendation to require OPG to provide an assessment of the ingress and transport of contaminants in groundwater on site during successive phases of the Project as recommended. For clarity, the Government of Canada would support enhanced groundwater and contaminant transport modelling extending to appropriate model boundaries, which may not necessarily be site boundaries. Natural Resources Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-C-2.1	Open
			D-C-4.1	Open
			D-C-5.1	Open
			D-C-6.1	Open
			D-P-12.6	Closed
18	The Panel recommends that based on the groundwater and contaminant transport modelling results, the Canadian Nuclear Safety Commission require OPG to expand the Radiological Environmental Monitoring Program. This program shall include relevant residential and private groundwater well quality data in the local study area that are not captured by the current program, especially where the modelling results identify potential critical groups based on current or future potential use of groundwater.	The Government of Canada accepts this recommendation to require OPG to update the Radiological Environmental Monitoring Program, based on the groundwater and contaminant transport modelling results. Natural Resources Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-C-6.1	Open

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
19	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to expand the scope of the groundwater monitoring program to monitor transitions in groundwater flows that may arise as a consequence of grade changes during the site preparation and construction phases of the Project. The design of the grade changes should guide the determination of the required monitoring locations, frequency of monitoring and the required duration of the program for the period of transition to stable conditions following the completion of construction and the initial period of operation.	The Government of Canada accepts this recommendation to require OPG to expand the scope of the groundwater monitoring program to monitor transitions in groundwater flows that may arise as a consequence of grade changes during the site preparation and construction phases of the Project. Natural Resources Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-12.6	Closed
20	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to perform a thorough evaluation of site layout opportunities before site preparation activities begin, in order to minimize the overall effects on the terrestrial and aquatic environments and maximize the opportunity for quality terrestrial habitat rehabilitation.	The Government of Canada accepts this recommendation to require OPG to perform a thorough evaluation of site layout opportunities before site preparation activities begin, as recommended. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. As part of the conditions of authorization under the Fisheries Act, Fisheries and Oceans Canada also commits to working with OPG to ensure overall impacts to aquatic habitat are minimized with appropriate mitigation and habitat compensation.	D-P-14.1 D-P-3.7	Open Closed
21	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to compensate for the loss of ponds, like-for-like, preferably in the site study area. The Panel also recommends that the Canadian Nuclear Safety Commission require OPG to use best management practices to prevent or	The Government of Canada accepts the recommendation to require OPG to use best management practices to prevent or minimize the potential runoff of sediment and other contaminants. The Government of Canada accepts the intent of compensating for the loss	D-P-3.7	Closed

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	minimize the potential runoff of sediment and other contaminants into wildlife habitat associated with Coot's Pond during site preparation and construction phases.	of ponds, but would also support the Canadian Nuclear Safety Commission requiring OPG to design compensation ponds that maximize ecological function, and not necessarily limited to "like-for-like". Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.		
22	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to develop a follow-up program for insects, amphibians and reptiles, and mammal species and communities to ensure that proposed mitigation measures are effective.	The Government of Canada accepts the intent of this recommendation to require OPG to develop a follow-up program for insects, amphibians and reptiles, and mammal species and communities as appropriate, and would support a focus for this follow-up program on species at risk and the use of this follow-up program to verify the conclusions of the Ecological Risk Assessment. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-12.5	Closed
23	The Panel recommends that Environment Canada collaborate with OPG to develop and implement a follow-up program to confirm the effectiveness of OPG's proposed mitigation measures for bird communities should naturally draft cooling towers be chosen for the condenser cooling system.	The Government of Canada accepts the intent of this recommendation to collaborate with OPG to develop such a follow-up program for bird communities, and would further support the consideration of potential impacts from habitat disturbance, as well as from bird collision impacts, in the scope of that program. The Government of Canada acknowledges that the Canadian Nuclear Safety Commission has the statutory authority and powers to ensure such a follow-up program is implemented through future	D-P-12.5	Closed

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
		licensing under the Nuclear Safety and Control Act. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.		
24	The Panel recommends that during the site preparation stage, Environment Canada shall ensure that OPG not undertake habitat destruction or disruption between the period of May 1 and July 31 of any year to minimize effects to breeding migratory birds.	The Government of Canada accepts the intent of this recommendation to avoid habitat destruction or disruption between the period of May 1 and July 31 of any year to protect most bird species' nesting activities. However, Environment Canada does not have the ability to ensure that OPG conducts all of its land clearing activities when migratory bird nests are not active since the department does not have a regulatory permitting ability to bind the proponent. The Government of Canada acknowledges that the Canadian Nuclear Safety Commission has the statutory authority and powers to address this recommendation through future licensing under the Nuclear Safety and Control Act. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-3.7	Closed
25	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to conduct more sampling to confirm the presence of Least Bittern before site preparation activities begin. The Panel recommends that the Canadian Nuclear Safety Commission require OPG to develop and implement a management plan for the species at risk that are known to occur on site. The plan	The Government of Canada accepts this recommendation to require OPG to conduct more sampling to confirm the presence of Least Bittern and to develop and implement a management plan for species at risk, as may be appropriate. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety	D-P-12.5 D-P-3.7	Closed Closed

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	should consider the resilience of some of the species and the possibility of off-site compensation.	Commission, upon request, to assist in the implementation of this recommendation.		
26	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to develop a comprehensive assessment of hazardous substance releases and the required management practices for hazardous chemicals on site, in accordance with the Canadian Environmental Protection Act, once a reactor technology has been chosen.	The Government of Canada accepts this recommendation to require OPG to develop a comprehensive assessment of hazardous substance releases and the required management practices for hazardous chemicals on site once a reactor technology has been chosen. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-C-2.1	Open
			D-C-5.1	Open
			D-P-12.9	Closed
			D-P-3.6	Closed
27	The Panel recommends that prior to any destruction of the Bank Swallow habitat, the Canadian Nuclear Safety Commission require OPG to implement all of its proposed Bank Swallow mitigation options, including: • the acquisition of off-site nesting habitat; • the construction of artificial Bank Swallow nest habitat with the capacity to maintain a population which is at least equal to the number of breeding pairs currently supported by the bluff and as close to the original bluff site as possible; and • the implementation of an adaptive management approach in the Bank Swallow mitigation plan, with the inclusion of a threshold of loss to be established in consultation with all stakeholders before any habitat destruction takes place.	The Government of Canada accepts the intent of this recommendation to require OPG to implement the identified Bank Swallow mitigation measures using an adaptive management approach, and would support determining required mitigation based on reasonable estimates of actual burrow loss. The Government of Canada expects that the acquisition of offsite nesting habitat should only be necessary if follow-up monitoring shows that onsite mitigation is unsuccessful, and notes that onsite mitigation may also include the enhancement of potential natural nesting sites within the Site Study Area. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-3.8	Open
28			D-P-12.4	Open

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	The Panel recommends that Fisheries and Oceans Canada require OPG to continue conducting adult fish community surveys in the site study area and reference locations on an ongoing basis. These surveys shall be used to confirm that the results of 2009 gillnetting and 1998 shoreline electrofishing reported by OPG, and the additional data collected in 2010 and 2011, are representative of existing conditions, taking into account natural year-to-year variability. Specific attention should be paid to baseline gillnetting monitoring in spring to verify the findings on fish spatial distribution and relatively high native fish species abundance in the embayment area, such as white sucker and round whitefish. The shoreline electrofishing habitat use study is needed to establish the contemporary baseline for later use to test for effects of lake infill armouring, if employed, and the effectiveness of mitigation.	The Government of Canada accepts this recommendation. Fisheries and Oceans Canada will work with Environment Canada, the Canadian Nuclear Safety Commission, the Ontario Ministry of Natural Resources and OPG to develop the details of an ongoing fisheries monitoring program which will be included as a condition of a Fisheries Act authorization.	D-P-15.1	Closed
29	The Panel recommends that Fisheries and Oceans Canada require OPG to continue the research element of the proposed Round Whitefish Action Plan for the specific purpose of better defining the baseline condition, including the population structure, genome and geographic distribution of the round whitefish population as a basis from which to develop testable predictions of effects, including cumulative effects.	The Government of Canada accepts this recommendation. Fisheries and Oceans Canada will work with Environment Canada, Canadian Nuclear Safety Commission, Ontario Ministry of Natural Resources and OPG to develop and finalize the Round Whitefish Action Plan. This plan, as a condition of a Fisheries Act authorization, will form part of the ongoing monitoring program and feed into an adaptive management plan to protect the round whitefish population into the future.	D-P-12.4 D-P-15.1	Open Closed

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
30	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to the construction of in-water structures, Fisheries and Oceans Canada require OPG to conduct: • additional impingement sampling at the existing Darlington Nuclear Generating Station to verify the 2007 results and deal with inter-year fish abundance variability and sample design inadequacies; and • additional entrainment sampling at the existing Darlington Nuclear Generating Station to better establish the current conditions. The program should be designed to guard against a detection limit bias by including in the analysis of entrainment losses those fish species whose larvae and eggs are captured in larval tow surveys for the seasonal period of the year in which they occur. A statistical optimization analysis will be needed to determine if there is a cost-effective entrainment survey design for round whitefish larvae.	The Government of Canada accepts this recommendation. Fisheries and Oceans Canada will work with the Canadian Nuclear Safety Commission, and the Ontario Ministry of Natural Resources to develop an impingement and entrainment sampling program. The Government of Canada would also like to note that authorization under the Fisheries Act will be required prior to any lake infill taking place and commits that Fisheries and Oceans Canada will work with OPG to ensure that the impingement and entrainment sampling program is developed and implemented as a condition of that authorization.	D-C-1.2	Open
			D-P-12.4	Open
			D-P-15.1	Closed
31	Irrespective of the condenser cooling system chosen for the Project, the Panel recommends that Fisheries and Oceans Canada not permit OPG to infill beyond the two-metre depth contour in Lake Ontario.	The Government of Canada accepts the intent of this recommendation. Fisheries and Oceans Canada will work with OPG to ensure that the HADD of fish habitat associated with the proposed lake infill is limited to the area within the two-metre depth contour of Lake Ontario. The extent of the HADD as well as appropriate mitigation and habitat compensation will be included in the conditions of authorization under the Fisheries Act.	D-C-1.1	Closed
			D-P-14.1	Open
			D-P-16.1	Open

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
32	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that Fisheries and Oceans Canada require OPG to mitigate the risk of adverse effects from operation, including impingement, entrainment and thermal excursions and plumes, by locating the system intake and diffuser structures in water beyond the nearshore habitat zone. Furthermore, OPG must evaluate other mitigative technologies for the system intake, such as live fish return systems and acoustic deterrents.	The Government of Canada accepts this recommendation. Fisheries and Oceans Canada will work with Environment Canada and the Canadian Nuclear Safety Commission to determine the appropriate location for the intake and diffuser structures, and to evaluate other mitigation options for both the intake and the diffuser structures, in order to mitigate adverse effects. Fisheries and Oceans Canada will work with OPG to ensure implementation through its regulatory process and conditions of authorization under the Fisheries Act.	D-C-1.2	Open
33	The Panel recommends that Fisheries and Oceans Canada require OPG to conduct an impingement and entrainment follow-up program at the existing Darlington Nuclear Generating Station and the Project site to confirm the prediction of adverse effects, including cumulative effects, and the effectiveness of mitigation. For future entrainment sampling for round whitefish, a statistical probability analysis will be needed to determine if unbiased and precise sample results can be produced.	The Government of Canada accepts this recommendation. Fisheries and Oceans Canada will work with the Canadian Nuclear Safety Commission and Ontario Power Generation to develop an impingement and entrainment study on the existing Darlington Nuclear Generating Station and at the proposed Project site to confirm predicted adverse effects and will further ensure implementation through its regulatory process and conditions of authorization under the Fisheries Act.	D-P-12.4	Open
34	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to construction, Environment Canada ensure that enhanced resolution thermal plume modeling is conducted by OPG, taking into account possible future climate change effects. Fisheries and Oceans Canada shall ensure that the results of the modeling are incorporated into the design of the outfall diffuser and the evaluation of alternative locations for the	The Government of Canada accepts the intent of this recommendation. Environment Canada is committed to reviewing the information provided by OPG, and will rely on Fisheries and Oceans Canada authorization for a HADD associated with the intake or outfall to ensure that OPG undertakes this modelling. Fisheries and Oceans Canada will work with Environment Canada, and the Canadian Nuclear Safety Commission to incorporate the	D-C-1.2 D-P-12.4	Open Open

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	placement of the intake and the diffuser of the proposed condenser cooling water system.	results from the thermal plume modeling into the determination of the appropriate location for the intake and diffuser structures to mitigate adverse effects. Fisheries and Oceans Canada will ensure implementation through conditions of a Fisheries Act authorization.		
35	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to operation, the Canadian Nuclear Safety Commission require OPG to include the following in the surface water risk assessment: • the surface combined thermal and contaminant plume; and • the physical displacement effect of altered lake currents as a hazardous pulse exposure to fish species whose larvae passively drift through the area, such as lake herring, lake whitefish, emerald shiner and yellow perch. If the risk assessment result predicts a potential hazard then the Canadian Nuclear Safety Commission shall convene a follow-up monitoring scoping workshop with Environment Canada, Fisheries and Oceans Canada and any other relevant authorities to develop an action plan.	The Government of Canada accepts this recommendation to require OPG to update a comprehensive surface water risk assessment as recommended, however would clarify that an assessment of the combined thermal and contaminant plume should consider not only the surface area of the plume, but its vertical extent as well. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the design of the surface water risk assessment and any subsequent action plan development.	D-C-1.2	Open
			D-P-12.3	Open
			D-P-12.4	Open
36	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that during operation, the Canadian Nuclear Safety Commission require OPG to undertake adult fish monitoring of large-bodied and small-bodied fish to confirm the effectiveness of mitigation measures and verify the predictions of no adverse thermal and physical diffuser jet effects.	The Government of Canada accepts this recommendation to require OPG to undertake adult fish monitoring to confirm the effectiveness of mitigation measures and effect predictions. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation	D-C-1.2	Open
			D-P-12.4	Open

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
		of this recommendation. Fisheries and Oceans Canada is committed to working with OPG to develop their fish and fish habitat monitoring and follow-up program and ensuring implementation through conditions of authorization under the Fisheries Act.		
37	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to determine the total area of permanent aquatic effects from the following, to properly scale mitigation and scope follow-up monitoring: • § the thermal plume + 2°C above ambient temperature; • § the mixing zone and surface plume contaminants; • physical displacements from altered lake currents; and • infill and construction losses and modifications.	The Government of Canada accepts the intent of this recommendation to require OPG to determine the total area of permanent aquatic effects from identified impacts. The Government of Canada would further support inclusion of cumulative effects assessment in this assessment, including the effects of impingement and entrainment and climate change. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. Further, Fisheries and Oceans Canada is committed to working with the Canadian Nuclear Safety Commission and OPG to ensure that any permanent aquatic habitat effects are mitigated, and appropriate habitat compensation is developed and implemented as a condition of any Fisheries Act authorization.	D-C-1.2	Open
			D-P-12.4	Open
38	The Panel recommends that the Canadian Nuclear Safety Commission require that the geotechnical and seismic hazard elements of the detailed site geotechnical investigation to be performed by OPG include, but not be limited to:	The Government of Canada accepts the intent of this recommendation to require OPG's detailed site investigation to include the noted geotechnical and seismic hazard elements, however, notes that this investigation may be	D-O-3.1	Open
			D-P-9.1	Closed
			D-P-9.3	Open
			D-P-9.4	Open

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status

	• Prior to site preparation:
	  ○ demonstration that there are no undesirable subsurface conditions at the Project site. The overall site liquefaction potential shall be assessed with the site investigation data; and
	  ○ confirmation of the absence of paleoseismologic features at the site and, if present, further assessment to reduce the overall uncertainty in the seismic hazard assessment during the design of the Project must be conducted.
	• During site preparation and/or prior to construction:
	  ○ verification and confirmation of the absence of surface faulting in the overburden and bedrock at the site.
	• Prior to construction:
	  ○ verification of the stability of the cut slopes and dyke slopes under both static and dynamic loads with site/Project-specific data during the design of the cut slopes and dykes or before their construction;
	  ○ assessment of potential liquefaction of the northeast waste stockpile by using the data obtained from the pile itself upon completion of site preparation;
	  ○ measurement of the shear strength of the overburden materials and the dynamic properties of both overburden and sedimentary rocks to confirm the site conditions and to perform soil-structure interaction analysis if necessary;
	  ○ assessment of the potential settlement in the quaternary deposits due to the groundwater
		performed concurrently with site preparation activities. Natural Resources Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-9.5	Open

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	drawdown caused by future St. Marys Cement quarry activities; and ○ assessment of the effect of the potential settlement on buried infrastructures in the deposits during the design of these infrastructures. • Prior to operation: ○ development and implementation of a monitoring program for the Phase 4 St. Marys Cement blasting operations to confirm that the maximum peak ground velocity at the boundary between the Darlington and St. Marys Cement properties is below the proposed limit of three millimetres per second (mm/s).			
39	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to prepare a contingency plan for the construction, operation and decommissioning Project stages to account for uncertainties associated with flooding and other extreme weather hazards. OPG shall conduct localized climate change modelling to confirm its conclusion of a low impact of climate change. A margin/bound of changes to key parameters, such as intensity of extreme weather events, needs to be established to the satisfaction of the Canadian Nuclear Safety Commission. These parameters can be incorporated into hydrological designs leading up to an application to construct a reactor, as well as measures for flood protection. OPG must also conduct a drought analysis and incorporate any additional required mitigation/design modifications, to the satisfaction of the Canadian Nuclear Safety	The Government of Canada accepts this recommendation to require OPG to prepare a contingency plan to account for uncertainties associated with flooding, drought and other extreme weather hazards, as recommended. The Government of Canada accepts the intent of the recommendation to conduct localized climate change modelling; however, if OPG uses reputable published studies to evaluate the anticipated impact of climate change for the Project area, localized climate change modelling may not be necessary. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-C-7.1	Open

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	Commission, as part of a Licence to Construct a reactor.			
40	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to: • establish an adaptive management program for algal hazard to the Project cooling water system intake that includes the setup of thresholds for further actions; and • factor the algal hazard assessment into a more detailed biological evaluation of moving the intake and diffuser deeper offshore as part of the detailed siting studies and the cost-benefit analysis of the cooling system.	The Government of Canada accepts this recommendation to require OPG to establish an adaptive management program for algal hazards to the cooling water system intake, and factor that assessment into planned siting studies and cost-benefit analyses. Fisheries and Oceans Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-C-1.2 D-P-12.4	Open Open
41	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission coordinate discussions with OPG and key stakeholders on the effects of the Project on housing supply and demand, community recreational facilities and programs, services and infrastructure as well as additional measures to help deal with the pressures on these community assets.	The Government of Canada accepts the intent of this recommendation for the CNSC to initiate discussions with OPG and key stakeholders, however, notes that these discussions may occur concurrently with site preparation activities.	D-P-17.1	Closed
42	The Panel recommends that on an ongoing basis, OPG pursue its strategy to ensure that Aboriginal students can benefit from the permanent job opportunities that will be available during the lifetime of the Project. In this regard, OPG should collaborate with various secondary and post-secondary education institutions as well as Aboriginal groups to ensure that such programs would be successful.	The Government of Canada supports this proposal and notes that such programs are consistent with OPG's presentation to the Panel on Aboriginal Interests on March 28, 2011, and with OPG's Aboriginal Relations Policy.	D-P-17.1	Closed

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
43	The Panel recommends that the Canadian Nuclear Safety Commission engage appropriate stakeholders, including OPG, Emergency Management Ontario, municipal governments and the Government of Ontario to develop a policy for land use around nuclear generating stations.	The Government of Canada accepts this recommendation for the Canadian Nuclear Safety Commission to engage appropriate stakeholders in developing policy for land use around nuclear generating stations.	D-P-17.1	Closed
44	The Panel recommends that the Government of Ontario take appropriate measures to prevent sensitive and residential development within three kilometres of the site boundary.	This recommendation was directed to the Government of Ontario.	N/A	Closed
45	The Panel recommends that the Municipality of Clarington prevent, for the lifetime of the nuclear facility, the establishment of sensitive public facilities such as school, hospitals and residences for vulnerable clienteles within the three-kilometre zone around the site boundary.	This recommendation was directed to the Municipality of Clarington.	N/A	Closed
46	Given that a severe accident may have consequences beyond the three and 10-kilometre zones evaluated by OPG, the Panel recommends that the Government of Ontario, on an ongoing basis, review the emergency planning zones and the emergency preparedness and response measures, as defined in the Provincial Nuclear Emergency Response Plan (PNERP), to protect human health and safety.	This recommendation was directed to the Government of Ontario.	N/A	Closed

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
47	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission ensure the OPG Traffic Management Plan addresses the following: • contingency plans to address the possibility that the assumed road improvements do not occur; • consideration of the effect of truck traffic associated with excavated material disposal on traffic operations and safety; • further analysis of queuing potential onto Highway 401; and • consideration of a wider range of mitigation measures, such as transportation-demand management, transit service provisions and geometric improvements at the Highway 401/Waverley Road interchange.	The Government of Canada accepts this recommendation to require that OPG's Traffic Management Plan consider elements related to contingency plans, truck traffic, queuing potential on Highway 401 and additional mitigation measures.	D-P-10.1	Closed
48	In consideration of public safety, the Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission coordinate a committee of federal, provincial and municipal transport authorities to review the need for road development and modifications.	The Government of Canada accepts the intent of this recommendation to support a federal, provincial and municipal review of the need for road development and modifications, however, notes that this review may be performed concurrently with site preparation activities.	N/A	Not Initiated

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
49	The Panel recommends that prior to construction, Transport Canada ensure that OPG undertake additional quantitative analysis, including collision frequencies and rail crossing exposure indices, and monitor the potential effects and need for mitigation associated with the Project.	The Government of Canada accepts the intent of this recommendation to require OPG to undertake additional rail safety studies, monitor the potential effects and determine the need for mitigation. The Railway Safety Act (RSA) places crossing safety responsibilities on the Railways and the Road Authorities. This policy reflects the objectives of Section 3 of the RSA. Ultimately, the Railway and the Road Authority must take the responsibility of performing the crossing assessment. Transport Canada is committed to provide assistance and expertise to the interested parties if required during the risk assessment and in the evaluation of any proposed mitigation measures.	D-C-3.1	Open
50	The Panel recommends that prior to construction, Transport Canada require OPG to conduct a risk assessment, jointly with Canadian National Railway, that includes: • an assessment of the risks associated with a derailment or other rail incident that could affect the Project; • an analysis of the risks associated with a security threat, such as a bomb being placed on a train running on the tracks that bisect the Project; • a comparative evaluation of the effectiveness of various mitigation measures or combination of measures (e.g., blast wall, retaining wall, recessed tracks, berm and railway speed restrictions within the vicinity of the site);	The Government of Canada recognizes that the CNSC has the statutory authority and powers to address this recommendation through future regulatory activities under the Nuclear Safety and Control Act. Transport Canada is committed to provide assistance and expertise to the Canadian Nuclear Safety Commission and other parties if required during the risk assessment and in the evaluation of any proposed mitigation measures.	D-C-3.1	Open

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	• a determination of the design criteria necessary to ensure the effectiveness of these measures (e.g., the appropriate height, strength, material and design of a blast wall); and • a critical analysis to confirm that these measures, when properly designed and implemented, would be sufficient to provide protection to the Project site in the event of a derailment at full speed or another adverse event.			
51	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to construction, Transport Canada work with OPG to develop a follow-up program to verify the accuracy of the prediction of no significant adverse effects to boating safety from the establishment of an increased prohibitive zone. OPG must also develop an adaptive management program, if required, to mitigate potential effects to small watercraft.	The Government of Canada accepts the intent of this recommendation. Transport Canada will provide guidance and support to OPG to assist in their development of a follow-up program to confirm that boating safety will not be significantly adversely affected. If an adaptive management program is required, Transport Canada can provide support and expertise to OPG in its development.	D-P-12.8	Closed
52	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to make provisions for on-site storage of all used fuel for the duration of the Project, in the event that a suitable off-site solution for the long-term management for used fuel waste is not found.	The Government of Canada accepts the intent of this recommendation to the extent that it is the responsibility of waste owners for managing and funding the safe and secure operation of their own wastes. Canada's 1996 Radioactive Waste Policy Framework states that the owners of radioactive waste are responsible for developing and implementing solutions, including all costs associated with safely and securely managing their wastes.	D-C-9.1	Open

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
53	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to make provisions for on-site storage of all of low and intermediate-level radioactive waste for the duration of the Project, in the event that a suitable off-site solution for the long-term management for this waste is not approved.	The Government of Canada accepts the intent of this recommendation to the extent that it is the responsibility of waste owners for managing and funding the safe and secure operation of their own wastes, in accordance with CNSC's regulatory requirements. Canada's 1996 Radioactive Waste Policy Framework states that the owners of radioactive waste are responsible for developing and implementing solutions, including all costs associated with safely and securely managing their wastes.	D-C-9.1	Open
54	The Panel recommends that during operation, the Canadian Nuclear Safety Commission require OPG to implement measures to manage releases from the Project to avoid tritium in drinking water levels exceeding a running annual average of 20 Becquerels per litre at drinking water supply plants in the regional study area.	The Government of Canada accepts the intent of this recommendation to safeguard drinking water; however, it notes that any proposed limits should be consistent with the tritium standards put in place by the relevant regulatory authorities. Health Canada's Guidelines for Canadian Drinking Water Quality, based on the recommendations of the International Commission on Radiological Protection and the World Health Organization, establish a safe consumption guideline limit of 7,000 Bq/L for tritium in drinking water. This limit has been accepted as a standard by the Province of Ontario. Since water quality is primarily a provincial responsibility in Canada, the provinces may adopt federal guidelines, or may establish their own criteria. The Government of Canada further notes that the Canadian Nuclear Safety Commission regulates potential releases of tritium to the environment from nuclear facilities by imposing regulatory limits as well as	D-C-4.1	Open

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
		precautionary action levels for tritium releases into air or water on a licence-specific basis. These limits are set with a goal to protect human health. The Canadian Nuclear Safety Commission's Radiation Protection Regulations require that releases are kept "As Low As Reasonably Achievable" (ALARA), social and economic factors taken into account.		

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
55	The Panel recommends that Health Canada and the Canadian Nuclear Safety Commission continue to participate in international studies seeking to identify long-term health effects of low-level radiation exposures, and to identify if there is a need for revision of limits specified in the Radiation Protection Regulations.	The Government of Canada accepts the recommendation to continue its participation in international studies seeking to identify long-term health effects of low-level radiation exposures. The Government of Canada accepts the intent of the recommendation to identify if there is a need for revision of limits specified in the Radiation Protection Regulations based on the results of international studies. Health Canada and the Canadian Nuclear Safety Commission will continue to participate in international studies dealing with long-term health effects of low-level radiation exposures; participate in committees/working groups with relevant international organizations; and regularly review the reports published by these international groups for developments in radiation protection. Health Canada can provide expertise to the Canadian Nuclear Safety Commission, upon request, in support of the review of limits specified in the Radiation Protection Regulations.	N/A	Closed
56	The Panel recommends that over the life of the Project, the Canadian Nuclear Safety Commission require OPG to conduct ambient air monitoring in the local study area on an ongoing basis to ensure that air quality remains at levels that are not likely to cause adverse effects to human health.	The Government of Canada accepts this recommendation to require OPG to conduct ambient air monitoring to ensure that air quality is not likely to cause adverse effects to human health. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-12.2	Closed

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
57	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to undertake an assessment of the off-site effects of a severe accident. The assessment should determine if the off-site health and environmental effects considered in this environmental assessment bound the effects that could arise in the case of the selected reactor technology.	The Government of Canada accepts this recommendation to require OPG to undertake an assessment of the off-site effects of a severe accident. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-C-3.1	Open
58	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission confirm that dose acceptance criteria specified in RD-337 at the reactor site boundary—in the cases of design basis accidents for the Project's selected reactor technology—will be met.	The Government of Canada accepts this recommendation to ask the Canadian Nuclear Safety Commission to confirm that dose acceptance criteria specified in RD-337 will be met.	D-C-3.1	Open
59	The Panel recommends that the Municipality of Clarington manage development in the vicinity of the Project site to ensure that there is no deterioration in the capacity to evacuate members of the public for the protection of human health and safety.	This recommendation was directed to the Municipality of Clarington.	N/A	Closed
60	The Panel recommends that prior to construction, the Government of Canada review the adequacy of the provisions for nuclear liability insurance. This review must include information from OPG and the Region of Durham regarding the likely economic effects of a severe accident at the Darlington Nuclear site where there is a requirement for relocation, restriction of use and remediation of a sector of the regional study area.	The Government of Canada accepts the intent of this recommendation, that the Government of Canada review the adequacy of the provisions for nuclear liability insurance. In bringing forward modernized nuclear civil liability legislation to replace the current Nuclear Liability Act, the Government of Canada will continue to review the adequacy of the provisions for nuclear liability insurance, taking into consideration the risk of Canadian nuclear installations and other relevant factors.	N/A	Closed

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
61	The Panel recommends that during operation, the Canadian Nuclear Safety Commission require OPG to monitor aquatic habitat and biota for potential cumulative effects from the thermal loading and contaminant plume of the discharge structures of the existing Darlington Nuclear Generating Station and the Project.	The Government of Canada accepts this recommendation to require OPG to monitor aquatic habitat and biota for potential cumulative effects from the thermal loading and contaminant plume. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The proponent will also be required to undertake an aquatic monitoring program as a condition of any Fisheries Act authorization.	D-P-12.4	Open
62	The Panel recommends that prior to site preparation, Environment Canada evaluate the need for additional air quality monitoring stations in the local study area to monitor cumulative effects on air quality.	The Government of Canada accepts this recommendation to evaluate the need for additional air quality monitoring stations in the local study area to monitor cumulative effects on air quality. If this evaluation finds that additional air quality monitoring stations in the local study area are required, the Government of Canada acknowledges that the Canadian Nuclear Safety Commission has the statutory authority and powers to address the findings of this recommendation through future licensing under the Nuclear Safety and Control Act.	N/A	Closed
63	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to evaluate the cumulative effect of a common-cause severe accident involving all of the nuclear reactors in the site study area to determine if further emergency planning measures are required.	The Government of Canada accepts the intent of this recommendation to require OPG to evaluate the cumulative effect of a common-cause severe accident in the site study area. The Government of Canada notes that the CNSC has established a task force to examine the lessons learned from the Japan Earthquake and will evaluate the operational, technical	D-C-3.1	Open

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
		and regulatory implications of the nuclear event in Japan in relation to Canadian nuclear power plants.		
64	The Panel recommends that the Canadian Environmental Assessment Agency revise the Canadian Environmental Assessment Agency Cumulative Effects Practitioner's Guide to specifically include consideration of accident and malfunction scenarios.	The Government of Canada accepts this recommendation. The Canadian Environmental Assessment Agency is in the process of updating its suite of instruments in support of cumulative effects assessment under the CEAA. An operational policy statement, scheduled for completion by December 2012, will provide core guidance to practitioners and include the consideration of accidents and malfunctions.	N/A	Closed
65	The Panel recommends that the Government of Canada make it a priority to invest in developing solutions for long-term management of used nuclear fuel, including storage, disposal, reprocessing and re-use.	The Government of Canada accepts the intent of this recommendation that priority be given to invest in solutions for the long-term management of used nuclear fuel. It is the responsibility of waste owners to fund and manage the safe and secure operation of their wastes. The Nuclear Waste Management Organization, established by the nuclear energy corporations, is responsible for implementing the government-selected plan for managing nuclear fuel waste over the long-term. The Government of Canada is committed to ensuring that an appropriate and properly funded long-term safe and secure solution is in place for the managing nuclear fuel waste over long term.	N/A	Closed

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
66	The Panel recommends that the Government of Canada update the Nuclear Liability and Compensation Act or its equivalent to reflect the consequences of a nuclear accident. The revisions must address damage from any ionizing radiation and from any initiating event and should be aligned with the polluter pays principle. The revised Nuclear Liability and Compensation Act, or its equivalent, must be in force before the Project can proceed to the construction phase.	The Government of Canada accepts the intent of this recommendation, that the Government of Canada update the Nuclear Liability and Compensation Act or its equivalent to reflect the consequences of a nuclear accident. The Government of Canada recognizes the importance of bringing forward modernized nuclear civil liability legislation to bring compensation in line with internationally accepted levels, and will decide on the timing of the next introduction of the Nuclear Liability and Compensation Act bill in Parliament.	N/A	Open
67	The Panel recommends that the Government of Canada provide clear and practical direction to the application of sustainability assessment in environmental assessments for future nuclear projects.	The Government of Canada accepts the intent of this recommendation. However, the scope of the assessment and the factors to be considered in future EAs for nuclear projects are decisions that should be taken on a project-by-project basis by future Responsible Authorities. Recognizing that sustainable development is a principle of the Canadian Environmental Assessment Act, should a separate sustainability assessment be required by Responsible Authorities for future nuclear projects, the Government of Canada agrees that it would be desirable for those Responsible Authorities to provide clear and practical direction to proponents and the public on how a sustainability assessment should be conducted.	N/A	Closed

D.2 SUMMARY LIST OF BWRX-300 LICENSING REGULATORY COMMITMENTS FOR CONSTRUCTION

This table identifies a summary of regulatory commitments OPG must provide for CNSC staff review to comply with regulatory requirements, or to verify that the design of the reactor facility will comply with regulatory requirements.

The summary of the commitment is described in the first column, with references to Safety and Control Area where the details of CNSC staff's review are provided in the second and third columns. The fourth column provides a reference to where the commitment is discussed in the proposed draft *Licence Conditions Handbook*.

Table D-2: Summary List of Licensing Regulatory Commitments for Construction

Commitment	Applies to SCA	Section in CMD	Regulatory Hold Point
Provision of updated Configuration Management program for the BWRX-300 Design	Management System	2.1.2.5	Installation of RB Foundation
Provision of OPG's Oversight Plans for Procurement	Management System	2.1.2.7	Installation of RB Foundation
Provision of OPG's Procurement Plans for Long-Lead Items	Management System	2.1.2.7	Installation of RB Foundation
Provision of Specifications for Long-Lead Items Important to Safety	Management System	2.1.2.7	Installation of RB Foundation
Provision of Descriptions of Maintenance, Surveillance, Inspection, and Testing Activities during Construction and Commissioning	Operating Performance	2.3.2.4	Installation of RB Foundation
Updated Seismic Hazard Assessment	Safety Analysis	2.4.2.1	Installation of RB Foundation
Updated Wind Hazard Assessment	Safety Analysis	2.4.2.1	Installation of RB Foundation
Updated Flood Hazard Assessment	Safety Analysis	2.4.2.1	Installation of RB Foundation
Provide Results of Engineered Backfill Verification and Testing to Demonstrate Backfill Performance	Safety Analysis	2.4.2.1	Installation of RB Foundation
Probabilistic Safety Analysis (PSA)	Safety Analysis Physical Design	2.5.2.5.5.1	Installation of RB Foundation
Deterministic Safety Analysis (DSA) documentation and Off-Site Dose Consequences	Safety Analysis	2.4.2.3	Installation of RB Foundation
Provision of Additional Analyses Supporting Considerations in the *Joint Report on GE Hitachi's Containment Evaluation Method*	Safety Analysis	2.4.2.3.1	Installation of RB Foundation

Commitment	Applies to SCA	Section in CMD	Regulatory Hold Point
Experimental Data Supporting TRACG Code Validation for the BWRX-300	Safety Analysis	2.4.2.3.4.1	Installation of RB Foundation
Provision of Uncertainty Analyses for DBAs	Safety Analysis	2.4.2.3.1	Installation of RB Foundation
Information Supporting the Analysis of DECs with Core Damage in accordance with REGDOC-2.4.1	Safety Analysis	2.4.2.3.8	Prior to Installation of RB Foundation
Source Term Analysis inclusive of DECs Leading to Core Damage	Safety Analysis	2.4.2.5	Installation of RB Foundation
Information Demonstrating Compliance with Subsections 4.4 and 4.5 of REGDOC-2.4.1	Safety Analysis	2.4.2.5	Installation of RB Foundation
Detailed Severe Accident Analyses as Required by REGDOCs 1.1.2, 2.4.1, and 2.5.2	Safety Analysis	2.4.2.5	Installation of RB Foundation
Submit Additional Information to Demonstrate Safety Objectives and Safety Goals are Met	Physical Design	2.5.1.1.4	Installation of RB Foundation
Occupational Dose Assessment for Individual NEWs	Physical Design	2.5.2.2.3	Installation of RPV
Radiation Shielding Design	Physical Design	2.5.2.2.3	Installation of RB Foundation
Ventilation and Estimated Ambient Airborne Radiological and Contamination Concentrations	Physical Design	2.5.2.2.3	Installation of RPV
Detailed Design Information for the Process Radiation Monitoring and Environmental Monitoring System	Physical Design	2.5.2.2.3	Installation of RB Foundation
Information documenting the Technical Bases that inform the Operational Limits and Conditions	Physical Design	2.5.2.2.2	Fuel-Out Commissioning
Provision of detailed information regarding complementary design features	Physical Design	2.5.2.2.5	Installation of RB Foundation
BWRX-300 Pressure Boundary Program and Request for Variance from Requirements of CSA N285.0	Physical Design	2.5.2.5.1	Installation of RB Foundation
Submission of BWRX-300 Code Classification Procedure and Proposed PRSC Code Classification	Physical Design	2.5.2.5.1	Installation of RB Foundation
Finalised list of D-RAP Structures, Systems, and Components	Physical Design	2.5.2.2.7	Installation of RB Foundation
Reliability Analysis Methodology and Results – Passive Safety Features	Safety Analysis Physical Design	2.4.2.2.2 2.5.2.2.7	Installation of RB Foundation
Staffing Analysis Summary Report	Physical Design	2.5.2.2.8	Not Applicable

Commitment	Applies to SCA	Section in CMD	Regulatory Hold Point
HFE Design Support and Evaluation Report	Physical Design	2.5.2.2.8	Installation of RB Foundation
HFE Analysis Summary Report	Physical Design	2.5.2.2.8	Installation of RPV
HFE Verification Results Report	Physical Design	2.5.2.2.8	Fuel-Out Commissioning
Detailed Design Information for Civil Structures: Reactor Building, Containment, and DP-SC Structures	Physical Design	2.5.2.4.1	Installation of RB Foundation
Detailed Design Information for Civil Structures: Turbine Building	Physical Design	2.5.2.4.2	Installation of RB Foundation
Documentation demonstrating implementation of Equipment Environmental Qualification (EQ) requirements in system design	Physical Design	2.5.2.5.2	Installation of RB Foundation
Further information on BWRX-300 predicted behaviour below “hot standby” conditions	Physical Design	2.5.2.5.4.4	Installation of the RPV
Results of Transient and Stability Analyses for all Facility States	Physical Design	2.5.2.5.4.4	Installation of the RPV
Identification of Systems Important to Safety	Physical Design	2.5.2.2.7	Installation of RB Foundation
Detailed Analysis Information on the ICS Overpressure Protection function	Physical Design	2.5.2.5.4.8	Installation of the RPV
Piping Analysis Report including the design features of the ICS	Physical Design	2.5.2.5.4.8	Prior to Installation of the RPV
Provide Additional Details for Implementation of the Break Exclusion Zone (BEZ) Methodology	Physical Design	2.5.2.5.4.9	Installation of RB Foundation
Reliability Analyses Results – Total Control Rod Failure-to-Insert Event	Physical Design	2.5.2.5.5.1	Installation of RB Foundation
Detailed Information about the BWRX-300 Alternate Approach Means of Shutdown	Physical Design	2.5.2.5.5.1	Installation of RB Foundation
Design Information for the ICS Condensate Return Valves	Physical Design	2.5.2.5.5.2	Installation of the RPV
Detailed Information on ICS Reliability Analyses and RIVs to Perform ECCS Functions	Physical Design	2.5.2.5.5.2	Installation of the RPV
Detailed Information regarding Containment, Containment Isolations, and Containment Peak Pressures	Physical Design	2.5.2.5.5.4.3	Installation of the RPV
Updated Containment Leak Rate Testing Documentation	Physical Design	2.5.2.5.5.4.3	Installation of the RPV

Commitment	Applies to SCA	Section in CMD	Regulatory Hold Point
Detailed Electrical Distribution System Design information	Physical Design	2.5.2.5.6	Installation of RB Foundation
Detailed Instrumentation and Control (I&C) System Design	Physical Design	2.5.2.2.5 2.5.2.5.7	Installation of RB Foundation
Detailed Design Information for the Turbine-Generator System: Main Turbine Equipment	Physical Design	2.5.2.5.8	Installation of RPV
Detailed Design information for the Condensate and Feedwater Systems	Physical Design	2.5.2.5.8	Installation of RPV
Detailed Design Information for the Liquid Waste Management System	Physical Design	2.5.2.5.11	Installation of RPV
Detailed Design Information for the Offgas System (Gaseous Waste Management System)	Physical Design	2.5.2.5.11	Installation of RPV
Detailed description of the Design Basis Fire Scenario	Physical Design	2.5.2.5.12	Installation of RB Foundation
Detailed Design Information for the Fire Protection System	Physical Design	2.5.2.5.12	Installation of RB Foundation
Updated Fire Hazard Assessment (FHA) Reflective of the Final Design	Physical Design	2.5.2.5.12	Installation of RB Foundation
Updated Fire Safe Shutdown Assessment (FSSA) reflective of the final design	Physical Design	2.5.2.5.12	Installation of RB Foundation
Updated Fire Protection System Code Compliance Review (CCR) reflective of the final design	Physical Design	2.5.2.5.12	Installation of RB Foundation
Updated Third-Party Review of the Fire Protection System Design	Physical Design Emergency Management and Fire Protection	2.5.2.5.12 2.9.2.3	Installation of RB Foundation
Detailed System Design information for Auxiliary Systems: Water Supply Systems	Physical Design	2.5.2.5.9	Installation of RPV
Detailed System Design information for Auxiliary Systems: HVAC and Process Auxiliary Systems	Physical Design	2.5.2.5.9	Installation of RB Foundation
Detailed Design and System information for the Fuel Handling System and Subsystems	Physical Design	2.5.2.5.10	Installation of RPV
Best-Available Technology Economically Achievable (BATEA) Assessment – Environmental	Environmental Protection	2.8.2.2	Installation of RB Foundation
Environmental Risk Assessment (ERA) for DNNP Construction	Environmental Protection	2.8.2.2	Installation of RB Foundation
Environmental Management and Protection Plan (EMPP) for DNNP Construction	Environmental Protection	2.8.2.2	Installation of RB Foundation

Commitment	Applies to SCA	Section in CMD	Regulatory Hold Point
Submission of Information for DNNP Commitment D-C-2 *Non-Radiological Effluent Management Program*	Environmental Protection	2.8.2.2	Installation of RB Foundation
Submission of Information for DNNP Commitment D-C-4 *Radiological Effluent Management Program*	Environmental Protection	2.8.2.2	Fuel-Out Commissioning
Submission of Information for DNNP Commitment D-C-5 *Radiological and Non-Radiological Air Emissions Program*	Environmental Protection	2.8.2.2	Installation of RB Foundation
Submission of Information for DNNP Commitment D-C-6 *Radiological Environmental Monitoring Program*	Environmental Protection	2.8.2.2	Fuel-Out Commissioning
Submission of Hazardous Waste Management Program	Waste Management	2.10.2.1	Installation of RB Foundation
Submission of Defensive Cyber Security Architecture and Specification Information for Construction	Security	2.11.2.4	Installation of RB Foundation
Submission of Cyber Security Procurement Requirements for Cyber Assets	Security	2.11.2.4	Installation of RB Foundation

PART 2

Part 2 provides all relevant information pertaining directly to the licence, including:

1. The current licence;
2. Any proposed changes to the conditions, licensing period, or formatting of an existing licence;
3. The proposed licence; and
4. The draft licence conditions handbook.

Current Licence

The current licence for DNNP (Power Reactor Site Preparation Licence (PRSL) 18.00/2031) is provided on the following pages of this document.

Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

PDF Ref.: e-Doc 6504521
Word Ref.: e-Doc 6416340
File: 2.01

NUCLEAR POWER REACTOR SITE PREPARATION LICENCE

OPG NEW NUCLEAR AT DARLINGTON GENERATING STATION

I) LICENCE NUMBER: **PRSL 18.00/2031** **(Effective Date: October 12, 2021)**

II) LICENSEE: Pursuant to section 24 of the *Nuclear Safety and Control Act* this licence is issued to:

Ontario Power Generation Inc.
700 University Avenue
Toronto, Ontario M5G 1X6

III) LICENCE PERIOD: This licence is valid from October 12, 2021 to October 11, 2031, unless suspended, amended, revoked or replaced.

IV) LICENSED ACTIVITIES:

This licence authorizes the licensee to:

(i) Prepare the Darlington Nuclear site, further described in OPG New Nuclear at Darlington Survey Drawings, NK054-DRAW-01210-00007 and NK054-DRAW-01210-00008, for the future construction and operation of a new nuclear generating station (hereinafter "the nuclear facility") located in the Township of Darlington, in the Municipality of Clarington, in the Regional Municipality of Durham, in the Province of Ontario. Site preparation activities include:

a) construction of site access control measures;
b) clearing and grubbing of vegetation;
c) excavation and grading of the site to a finished elevation of approximately +78 masl (metres above sea level);
d) installation of services and utilities (domestic water, fire water, sewage, electrical, communications, natural gas) to service the future nuclear facility;
e) construction of administrative and support buildings inside the future protected area;
f) construction of environmental monitoring and mitigation systems; and,
g) construction of flood protection and erosion control measures.

(ii) Possess and use prescribed information that is required for, associated with, or arise from the activities described in (i).

V) EXPLANATORY NOTES:

(i) Nothing in this licence shall be construed to authorize non-compliance with any other applicable legal obligation or restriction.

(ii) Unless otherwise provided for in this licence, words and expressions used in this licence have the same meaning as in the *Nuclear Safety and Control Act* and associated Regulations.

(iii) The "OPG DARLINGTON NEW NUCLEAR PROJECT (DNNP) POWER REACTOR SITE LICENCE (PRSL) Licence Conditions Handbook (LCH)" provides compliance verification criteria including the Canadian standards and regulatory documents used to verify compliance with the conditions in the licence. The LCH also provides information regarding delegation of authority, applicable versions of documents and non-mandatory recommendations and guidance on how to achieve compliance.

VI) CONDITIONS:

G. **General**

G.1 The licensee shall conduct the activities described in Part IV of this licence in accordance with the licensing basis, defined as:

(i) the regulatory requirements set out in the applicable laws and regulations;

(ii) the conditions and safety and control measures described in the facility's or activity's licence and the documents directly referenced in that licence; and,

(iii) the safety and control measures described in the licence application and the documents needed to support that licence application.

unless otherwise approved in writing by the Canadian Nuclear Safety Commission (CNSC, hereinafter "the Commission").

G.2 The licensee shall give written notification of changes to the facility or its operation, including deviation from design, operating conditions, policies, programs and methods referred to in the licensing basis.

G.3 The licensee shall control the use and occupation of any land within the exclusion zone.

G.4 The licensee shall provide, at the nuclear facility and at no expense to the Commission, suitable office space for employees of the Commission who customarily carry out their functions on the premises of that nuclear facility (onsite Commission staff).

G.5 The licensee shall maintain a financial guarantee for decommissioning that is acceptable to the Commission.

G.6 The licensee shall implement and maintain a public information and disclosure program.

1. Management System

1.1 The licensee shall implement and maintain a management system.

2. Human Performance Management

2.1 Not applicable.

3. Operating Performance

3.1 The licensee shall implement and maintain an operations program.

3.2 The licensee shall implement a program for reporting to the Commission, or person authorized by the Commission.

4. Safety Analysis

4.1 The licensee shall implement and maintain a safety analysis program.

5. Physical Design

5.1 The licensee shall implement and maintain a design program.

6. Fitness for Service

6.1 Not applicable.

7. Radiation Protection

7.1 The licensee shall implement and maintain a radiation protection program.

8. Conventional Health and Safety

8.1 The licensee shall implement and maintain a conventional health and safety program.

9. Environmental Protection

9.1 The licensee shall implement and maintain an environmental protection program.

10. Emergency and Management and Fire Protection

10.1 The licensee shall implement and maintain an emergency preparedness program.

10.2 The licensee shall implement and maintain a fire protection program.

11. Waste Management

11.1 The licensee shall implement and maintain a waste management program.

11.2 The licensee shall implement and maintain a decommissioning plan.

12. Security

12.1 The licensee shall implement and maintain a security program.

13. Safeguards and Non-Proliferation

13.1 The licensee shall implement and maintain a safeguard program.

14. Packaging and Transport

14.1 Not applicable.

15. Site Specific

15.1 The licensee shall implement the mitigation measures proposed and commitments made during the Darlington Joint Review Panel process, including the applicable recommendations of the Darlington Joint Review Panel Report, in accordance with the Government of Canada response.

15.2 The licensee shall implement and maintain an environmental assessment follow-up program.

15.3 The licensee shall have the documents required for site preparation accepted by the Commission, or a person authorized by the Commission, prior to the commencement of the licensed activities described in Part IV (i) of this licence.

SIGNED at OTTAWA, October 12, 2021

Velshi, Rumina

Digitally signed by Velshi, Rumina
DN: C=CA, O=GC, OU=CNSC-CCSN, CN="Velshi, Rumina"
Reason: I am the author of this document
Location: your signing location here
Date: 2021-10-12 10:10:29
Foxit PhantomPDF Version: 9.7.1

Rumina Velshi
President
Canadian Nuclear Safety Commission

Canada's Nuclear Regulator

Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

File #: 2.01/011216
e-Doc 6888978 (Word)
e-Doc 6925913 (PDF)

LICENCE CONDITIONS HANDBOOK

LCH-PRSL-DNNP-R001

ASSOCIATED WITH

ONTARIO POWER GENERATION (OPG)
DARLINGTON NEW NUCLEAR PROJECT (DNNP)
POWER REACTOR SITE LICENCE (PRSL)

LICENCE #PRSL 18.00/2031

(Effective: 12 January 2023)

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Licence Conditions Handbook **Effective: 12 January 2023**

LCH-PRSL-DNNP-R001

Associated with:
Ontario Power Generation
Darlington New Nuclear Project
PRSL 18.00/2031

SIGNED at OTTAWA this 12th day of January 2023.

Caroline Ducros
Director General
Directorate of Advanced Reactor Technologies
CANADIAN NUCLEAR SAFETY COMMISSION

Revision History

Effective Date	Rev. #	LCH e-Doc #	Section(s) changed	Description of the Changes	DCR e-Doc #
May 20, 2022	R000	6792091 (Word e-Doc) 6799637 (PDF e-Doc)	N/A	First Issue	N/A
12 January 2023	R001	6888978 (Word e-Doc) 6925913 (PDF e-Doc)		Minor updates to text to clarify requirements. Update and alignment of licensing basis and written notification documents.	6887219

TABLE OF CONTENTS

INTRODUCTION

The general purpose of the Licence Conditions Handbook (LCH) is to identify and clarify the regulatory requirements and other relevant parts of the licensing basis for each licence condition. This will help ensure that the licensee maintains the facility and its operation in accordance with the licensing basis for the facility and the intent of the nuclear power reactor site licence (PRSL).

The LCH is not intended to introduce new requirements but simply to elaborate upon the requirements in the licensing basis. The LCH should be read in conjunction with the licence. The LCH provides compliance verification criteria (CVC) that the staff of the Canadian Nuclear Safety Commission (CNSC) uses to verify compliance with each licence condition. These regulatory criteria are written in mandatory language. The CVC also contains information regarding delegation of authority and applicable versions of documents referenced in the licence. Furthermore, the LCH provides non-mandatory recommendations and guidance on enhancing the effectiveness of the safety and control measures.

This LCH addresses the scope of activities covered under the licence to prepare site.

The licensee is required to meet the requirements of any standard or regulatory document that is explicitly mentioned in the CVC sections of this LCH. These were referenced in the licence applications or supplemental updates and, therefore, form part of the licensing basis for the nuclear facility. However, the standards and regulatory documents referenced in the Recommendations and Guidance section should be considered by the licensee as a means to meet or exceed requirements.

Where the LCH refers to licensee submissions to CNSC staff or requests for consent of CNSC staff, if the proposed action or request would lead to the licensee being outside the licensing basis, licence condition G.1 applies. For these submissions and requests, the prevailing communications protocol shall be followed, unless stated otherwise in the CVC for the applicable licence condition.

Current versions of the written notification (WN) documents cited in this LCH are tracked in the document “Darlington New Nuclear Project – LCH Control and Administration (e-Doc 6416335). This spreadsheet is controlled by the Advanced Reactor Licensing Division (ARLD) and is available to the licensee upon request.

This LCH includes appendices A to D which contain administrative information and lists of LCH-related documents.

Appendix C of this LCH provides information on the Government of Canada response to Joint Review Panel (JRP) report recommendations. The appendix lists the OPG deliverable that addresses the JRP recommendation. Deliverables are presented as D-X-#, where:

- P applies to the site preparation phase of the project;
- C applies to the construction phase of the project;

O applies to the operation phase of the project; and
is the number assigned to the deliverable and sub-deliverable

G. GENERAL

G.1 Licensing Basis for the Licensed Activities

Licence Condition G.1:

The licensee shall conduct the activities described in Part IV of this licence in accordance with the licensing basis, defined as:

(i) the regulatory requirements set out in the applicable laws and regulations;

(ii) the conditions and safety and control measures described in the facility's or activity's licence and the documents directly referenced in that licence; and,

(iii) the safety and control measures described in the licence application and the documents needed to support that licence application.

unless otherwise approved in writing by the Canadian Nuclear Safety Commission (CNSC, hereinafter "the Commission").

Preamble:

The licensing basis, as defined in LC G.1, is discussed in CNSC document REGDOC-3.5.3, *Regulatory Fundamentals, Version 2 (2021)*.

The licensing basis sets the boundary conditions for acceptable performance at a regulated facility or activity, thus establishing the basis for the CNSC compliance program with respect to that regulated facility or activity. This LCH aligns specific parts of the licensing basis with each LC. For those LCs that require the licensee to implement and maintain a particular program, the licensing basis includes the licensee document(s) that describe the program. This could be a single document, or multiple documents, depending on the licensee's document structure.

The licensed activities are those described in Part IV of PRSL 18.00/2031. The activity licensed by the PRSL is "site preparation" of a New Nuclear Generating Station at the Darlington New Nuclear Project site with a maximum combined net electrical output of 4800 megawatt electric (MWe) to supply the Ontario grid. Site preparation involves activities necessary to facilitate the subsequent construction and operation of the new nuclear facility. The PRSL does not permit physical works directly related to construction of nuclear facility structures, systems, and components.

Compliance Verification Criteria:

Part (i) of the licensing basis lists the applicable laws and regulations that are set out in several federal statutes and agreements, including the following:

- *Nuclear Safety and Control Act;*
- *Canadian Environmental Assessment Act;*
- *Canadian Environmental Protection Act;*
- *Nuclear Liability and Compensation Act;*
- *Transportation of Dangerous Goods Act, 1992;*
- *Radiation Emitting Devices Act;*
- *Access to Information Act; and*
- *Canada/IAEA Safeguards Agreement.*

Parts (ii) and (iii) of the licensing basis consists of the safety and control measures described in the licence, a licence application, and the documents needed to support that licence application. The safety and control measures include important aspects of that documentation, as well as important aspects of analysis, design, operation, etc. They may be found in high-level, programmatic licensee documents but might also be found in lower-level, supporting licensee documentation.

Parts (ii) and (iii) of the licensing basis also includes safety and control measures in the CNSC regulatory documents, CSA standards, and other standards and references that are cited in the licence, the licence application, or in the licensee's supporting documentation. Those support documents could cite other documents that also contain safety and control measures (i.e., there may be safety and control measures in "nested" references in the application).

LC G.1 requires the licensee to conform to, and/or implement, all the safety and control measures. Note, however, that not all details in referenced documents are necessarily considered to be safety and control measures:

- Details that are not directly relevant to safety and control measures for facilities or activities authorized by the licence are excluded from the licensing basis; and
- Details that are relevant to a different safety and control area (i.e., not the one associated with the main document), are only part of the licensing basis to the extent they are consistent with the main requirements for both safety and control areas.

The licensing basis is established by the Commission at the time the licence is issued. Per LC G.1, conduct of activities during the licence period that is not in accordance with the licensing basis is only allowed based on the written approval of the Commission. Similarly, only the Commission can change the licensing basis during the licence period; and this would be recorded in writing.

GENERAL

Where the licensing basis refers to specific configurations, methods, solutions, designs etc., the licensee is free to propose alternate approaches that differ from those in the CVC as long as they remain in accordance with the licensing basis for the facility.

This LC is not intended to unduly inhibit the ongoing management and conduct of site preparation activities of the facility or the licensee's ability to adapt to changing circumstances and continuously improve. This LC does not explicitly prohibit changes (such as in management or conduct of site preparation activities) with a neutral or positive impact on safety. Changes shall be in accordance with the licensing basis and shall be made in accordance with the licensee's management system (see LC 1.1). Changes to licensee documents may require written notification to the CNSC, even if they are in accordance with the licensing basis; see LC G.2.

For unapproved activities that are not in accordance with the licensing basis, the licensee shall take action as soon as practicable to return to a state consistent with the licensing basis, taking into account the risk significance of the situation.

In the event of any conflict or inconsistency between two elements of the licensing basis, the licensee shall direct the conflict or inconsistency to CNSC staff for resolution. Any such conflict or inconsistency identified would be discussed between the licensee and CNSC staff; the outcome of such discussions will be documented to ensure a common understanding.

Resolutions made pursuant to this LC are recorded in Appendix D of the LCH. This appendix lists the subject of the conflict or inconsistency and will give the reference to the electronic record (e-Doc #######) documenting the resolution as well as the licensee's identifying correspondence number. Any resolution made will be formally communicated to all other power reactor licensees as appropriate, ensuring consistency of CNSC regulatory oversight amongst all nuclear facilities in Canada. The appropriate changes will be reflected in the CVC of the affected LC and compliance to the resolution will therefore be subject to verification.

The licensee's safety and control measures are described in the following documentation provided at the time of the licence application, or in support of thereafter:

Date	Document Title	Document #	e-Doc #
June 29, 2020	Application for Renewal of OPG's Darlington New Nuclear Project (DNNP) Nuclear Power Reactor Site Preparation Licence (PRSL)	NK054-CORR-00531-10533	6330102

GENERAL

Recommendations and Guidance:

When the licensee becomes aware that a proposed change or activity might be outside the licensing basis, it should first seek direction from CNSC staff regarding the potential acceptability of this change or activity. The licensee should take into account that certain types of proposed changes might require significant lead times before CNSC staff can make recommendations and/or the Commission can properly consider them.

G.2 Notification of Changes

Licence Condition G.2:

The licensee shall give written notification of changes to the facility or its operation, including deviation from design, operating conditions, policies, programs and methods referred to in the licensing basis.

Preamble:

The licensing basis sets the boundary conditions for acceptable performance at a regulated facility or activity and thus establishes the basis for the CNSC's compliance program in respect of that regulated facility or activity. Licensees are required to conduct licensed activities in accordance with the licensing basis; however, as changes to the documents included or referenced in the licence application are to be expected during the licensing period, licensees are expected to assess changes for impact on the licensing basis. Any changes to the licensing basis require evaluation to determine impact as related to the provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

In general, it is expected that changes for which the licensee shall notify the CNSC will be captured as changes to specific licensee documents. This LCH identifies licensee documents that require written notification (WN) of changes to the CNSC. They are primarily selected from the set of documents supporting the application and which describe the licensee's safety and control measures (part (iii) of the licensing basis, as defined in LC G.1). In identifying the WN documents for each LC, CNSC staff select licensee documents that provide reasonable assurance that adequate safety and control measures are in place to satisfy the LC. See LC G.1 for additional discussion of the licensing basis.

Tables under each LC in the LCH identify the documents (if any) requiring written notification of change. WN documents are subdivided into ones that require prior written notification of changes and those that require written notification only (changes implemented at the time of notification).

CNSC staff will track the version history of all WN documents cited in the LCH with the exception of security-related documents Darlington New Nuclear Project – LCH Control and Administration (e-Doc 6416335) has been created for this purpose.

Compliance Verification Criteria:

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
Information Management	OPG-PROG-0001	No

GENERAL

The licensee shall, as a minimum, provide written notification to the CNSC of changes to the specific licensee documents identified in this LCH under the most relevant LC.

The changes for which CNSC requires written notification consist, primarily, of those captured as changes to specific licensee documents. Licensee documents that require written notification of change are identified in this LCH under the most relevant LC. These documents represent the minimum subset of documents. For any change that is not captured as a change to a document listed in the LCH, if it negatively impacts designs, operating conditions, policies, programs, methods, or other elements that are integral to the licensing basis, the licensee shall provide written notification of the change.

Written notification (WN) is defined as a physical or electronic communication from a person authorized to act on behalf of the licensee to a CNSC delegated authority or a CNSC staff member acting on behalf of a CNSC delegated authority. WN documents are subdivided into ones that require prior written notification of changes and those that require written notification only. For the former type, the licensee shall submit the WN to the CNSC prior to implementing the change. Typically, the requirement is to submit the proposed changes 30 days prior to planned implementation; however, the licensee shall allow sufficient time for the CNSC to review the change proportionate to its complexity and the importance of the safety and control measures being affected. For the latter type, the licensee need only submit the WN at the time of implementing the change. All WNs shall include a summary description of the change, the rationale for the change, and a summary explanation of how the licensee has concluded that the changed document remains in accordance with the licensing basis. A copy of the revised WN document shall accompany the notification.

Changes to the licensing basis that are not clearly in the safe direction require further assessment of impact to determine if prior Commission approval is required in accordance with LC G.1.

In the event of a discrepancy between the tables in any section of this LCH that contain numbers and limits drawn from licensee documents and the licensee documentation upon which they are based, the licensee documentation shall be considered the authoritative source, provided that their change control process was followed. Since these limits are considered safety and control measures, any change to them in the licensee documents listed in the WN tables will be reviewed by CNSC staff to confirm they remain within the licensing basis.

Should a change to a WN document listed in this LCH also require submission for approval/acceptance per a standard referenced in the PRSL, the licensee shall submit that document for approval/acceptance to comply with the governing standard and the associated LC. Submission of a proposed WN document for approval, in accordance with a LC does not alleviate the licensee from also providing the written notification of the revised (approved) document.

OPG shall follow its process OPG-PROG-0001, *Information Management*, for any changes related to a document listed in Appendix B.

Appendix B of the LCH lists the key OPG documents which are deemed to contain the safety and control measures for the licensed activities that form part of the licensing basis.

Recommendations and Guidance:

A list of criteria that could help determine if a change would be in accordance with the licensing basis is provided in Appendix A of CNSC internal document *Overview of assessing licensee changes to documents or operations*, e-Doc 4055483. Such criteria would also be used if the change requires CNSC staff acceptance, due to other requirement in the licensing basis.

For proposed changes that would not be in accordance with the licensing basis, the Recommendations and Guidance for LC G.1 apply.

G.3 Land Use and Occupation

Licence Condition G.3:

The licensee shall control the use and occupation of any land within the exclusion zone.

Preamble:

The *General Nuclear Safety and Control Regulations* require that a licence application contain a description of the nuclear facility.

Compliance Verification Criteria:

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
OPG New Nuclear at Darlington Survey Drawing	NK054-DRAW-01210-00007	Yes
Exclusion Zone Determination for Darlington New Nuclear Project	NK054-REP-01210-00003	Yes

The proposed exclusion zone is no more than 500 metres from the exterior of any reactor building.

The licensee shall ensure that the use and occupancy of land within the exclusion zone does not compromise the safety and control measures in the licensing basis. Specifically, the licensee shall consider emergency preparedness and ALARA with respect to land use within the exclusion zone. This applies to land the licensee occupies as well as to land occupied by others.

The licensee shall not permit a permanent dwelling to be built within the exclusion zone. "Permanent dwelling" refers to housing that is meant to be fixed. The licensee may erect, for a short time without prior notification, a temporary dwelling (e.g., a trailer).

The licensee shall notify the CNSC of changes to the use and occupation of any land within the exclusion zone. The notice shall be submitted prior to the change, with lead time in proportion to the expected impact of the change on the licensee's safety and control measures.

The licensee shall notify the CNSC of changes to the agreement with the Municipality of Clarington, which ensures safe public access to the waterfront trail that traverses the Darlington site.

These documents shall be revised to reflect any transfer of land within the exclusion zone to non-licensee ownership.

Recommendations and Guidance:

The licensee should notify the CNSC of any sensitive land uses proposed within 3 km of the DNNP site as a result of any potential policy changes for land use around nuclear generating stations.

G.4 Office for CNSC On-Site Inspectors

Licence Condition G.4:

The licensee shall provide, at the nuclear facility and at no expense to the Commission, suitable office space for employees of the Commission who customarily carry out their functions on the premises of that nuclear facility (onsite Commission staff).

Preamble:

CNSC staff require suitable office space and equipment at the Darlington Nuclear Generating Station (DNGS) in order to satisfactorily carry out its regulatory activities.

Compliance Verification Criteria:

Any changes of accommodation or equipment shall be made based on discussion, and subsequent agreement, between the CNSC and the licensee.

Recommendations and Guidance:

None.

G.5 Financial Guarantee

Licence Condition G.5:

The licensee shall maintain a financial guarantee for decommissioning that is acceptable to the Commission.

Preamble:

The *General Nuclear Safety and Control Regulations* requires that a licence application contain a description of any proposed financial guarantee relating to the activity to be licensed.

The licensee is responsible for all costs of implementing the proposed decommissioning plans and providing an appropriate financial guarantee that is acceptable to the Commission.

It is expected that OPG will propose an appropriate financial guarantee in accordance with G-206, *Financial Guarantees for the Decommissioning of Licensed Activities*, June 2000 that is commensurate with the decommissioning financial liabilities.

As described in deliverable D-P-13 Preliminary Decommissioning Plan and Financial Guarantee in the OPG commitments report, OPG will propose an appropriate financial instrument commensurate with decommissioning financial liabilities when OPG requests authorization for more substantive work on the DNNP site.

Compliance Verification Criteria:

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
NK054-REP-00531-10003	Documentary Information Summary: DNNP Site Preparation Financial Guarantee	Yes

In its *Record of Decision for Acceptance of the Revised Financial Guarantee*, issued on June 07, 2022, the Commission accepted OPG's revised financial guarantee for the DNNP. The current value of the financial guarantee represents $0.00 dollars for 2022 and 2023, and a proposed value of $451,000 for 2024, given that the commencement of activities in the PRSL would require limited decommissioning work to return the site to an industrial site should the project be cancelled.

The Commission also required OPG to provide an original financial guarantee instrument to CNSC by December 31, 2023. The Commission further requested OPG update the financial guarantee for CNSC staff review in 2024 or as part of the application for a licence to construct.

GENERAL

The financial guarantee for decommissioning the nuclear facility shall be reviewed and revised by the licensee every five years or when the Commission requires or following a revision of the preliminary decommissioning plan that significantly impacts the financial guarantee.

Recommendations and Guidance:

Document Title	Document #	Organization
Financial Guarantees for the Decommissioning of Licensed Activities	G-206	CNSC

G.6 Public Information and Disclosure

Licence Condition G.6:

The licensee shall implement and maintain a public information and disclosure program.

Preamble:

A public information and disclosure program (PIDP) is a regulatory requirement for licence applicants and licensees under the *Class I Nuclear Facilities Regulations*, which requires that a licence application contain a program to inform persons living in the vicinity of the site of the general nature and characteristics of the anticipated effects of the licensed activity on the environment, health, and safety of persons.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-3.2.1	Public Information and Disclosure	2018	October 12, 2021

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
Nuclear Public Information Disclosure	N-STD-AS-0013	No

The licensee shall implement and maintain a program for public information and disclosure. This program shall comply with the requirements set out in CNSC regulatory document REGDOC-3.2.1, *Public Information and Disclosure*.

As described in deliverable D-P-17 Deliverable Title: D-P-17 Communications, Consultation and Stakeholder Relations Program/Plan in the OPG commitments report, OPG will:

- Develop a follow-up Communication Plan as per the Environmental Impact Statement;
- Conduct Public Attitude Research (PAR) of Local Study Area (LSA) and Regional Study Area (RSA) residents at the end of each phase of the project;
- Undertake a survey of near residents living in the vicinity of the Darlington site at the start of the Construction phase and Operation and Maintenance phase; and
- Undertake a recreational user survey of the DN site recreational facilities at the start of the Construction phase and the Operation and Maintenance phase.

Where the public has indicated an interest to know, the PIDP shall include a commitment to and disclosure protocol for ongoing, timely communication of information related to the licensed facility during the course of the licensing period.

Recommendations and Guidance:

None.

1 SCA – MANAGEMENT SYSTEM

1.1 Management System

The Safety and Control Area "Management System" covers the framework which establishes the processes and programs required to ensure an organization achieves its safety objectives, continuously monitors its performance against these objectives, as well as, fostering a healthy safety culture.

Licence Condition:

The licensee shall implement and maintain a management system.

Preamble:

The *General Nuclear Safety and Control Regulations* require that a licence application contain information related to the organizational management structure and responsibilities.

The *Class I Nuclear Facilities Regulations* require that a licence application contain the proposed management system, including the quality assurance program for the design of the nuclear facility.

Safe and reliable operation requires a commitment and adherence to a set of management system principles and, consistent with those principles, the establishment and implementation of processes that achieve the expected results. CSA standard N286, *Management system requirements for nuclear facilities*, contains the requirements for a management system throughout the life cycle of a nuclear power plant and extends to all safety and control areas.

The management system must satisfy the requirements set out in the regulations made pursuant to the *Nuclear Safety and Control Act*, the licence and the measures necessary to ensure that safety is of paramount consideration in implementation of the management system. An adequately established and implemented management system provides CNSC staff confidence and evidence that the licensing basis remains valid.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-1.1.1	Site Evaluation and Site Preparation for New Reactor Facilities	2018	October 12, 2021

Document Number	Document Title	Version	Effective Date
N286	Management system requirements for nuclear facilities	2012	October 12, 2021
REGDOC-2.1.2	Safety Culture	2018	October 12, 2021
REGDOC-2.2.2	Personnel Training	2016	October 12, 2021
REGDOC-2.5.2	Design of Reactor Facilities: Nuclear Power Plants (for site preparation design management only; Sections 5.1 to 5.3 only)	2014	October 12, 2021
N286.10	Configuration management for high energy reactor facilities	2016	October 12, 2021

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
Nuclear Safety Policy	N-POL-0001	No
Nuclear Management System	N-CHAR-AS-0002	Yes
Nuclear Management System Administration	N-PROG-AS-0001	No
Nuclear Management Systems Organization	N-STD-AS-0020	No
Information Management	OPG-PROG-0001	No
Human Performance	N-PROG-AS-0002	No
Performance Improvement	N-PROG-RA-0003	No
Independent Assessment	N-PROG-RA-0010	No
Training	N-PROG-TR-0005	No
Items and Services Management	OPG-PROG-0009	No
Project Management	OPG-PROG-0039	No

MANAGEMENT SYSTEM

The licensee shall implement and maintain a management system. This management system shall comply with the requirements set out in CSA standard N286, *Management system requirements for nuclear facilities*.

The licensee shall ensure that the management system meets the requirements of CSA N286 at all times throughout the life cycle of the nuclear facility from the initial conception through completion of decommissioning.

The top tier document of the DNNP management system is the charter N-CHAR-AS-0002, *Nuclear Management System*. The charter describes the programs and processes which establish OPG's overall Nuclear Management System.

OPG's accountabilities for project management and oversight of the selected contracted entities are described in OPG-PROG-0039, *Project Management*. This program sets out the principles and requirements for planning, organizing, and managing resources to ensure the safe, consistent, effective execution and completion of all projects within OPG. Safety and required quality shall be the overriding priority and will not be compromised for cost or schedule. OPG-PROG-0039 is implemented through a series of implementing documents, an implementing document, OPG-MAN-00120-0010, *Project Integration Management*, outline the processes necessary for effectively managing project activities and deliverables, including ensuring that all components of the project are adequately developed, coordinated, managed and aligned. Project Integration Management involves the development of a Project Charter and Project Management Plan (PMP). The PMP provides the project team and interfacing organizations a common understanding of the scope, assumptions, constraints, risks, and resources, and defines how project integration management will occur as processes interact.

Although the selected Engineering, Procurement and Construction Company (EPC) is to perform the licensed activities, it must be made clear that OPG retains the ultimate accountability and responsibility as licensee under the *Nuclear Safety and Control Act* and associated Regulations to ensure that the licensed activities are carried out in accordance with the requirements of the licence. As such, OPG is accountable to the CNSC to provide the required assurances that the health, safety, and security of the public and workers, and the environment are protected, and that this accountability to the CNSC cannot be delegated through contractual arrangements.

Management System

The management system documentation shall contain sufficient detail to demonstrate that the described processes stated directly or by reference, provides the needed direction to comply with the conditions stated in the PRSL and the criteria herein.

Organization

OPG's organization is defined in N-STD-AS-0020, *Nuclear Management Systems Organizations* and OPG correspondence "Persons Authorized to Act on Behalf of OPG in Dealings with the CNSC." OPG shall document the organizational structure for safe and reliable conduct of licensed activities and shall include all positions with responsibilities for the management and

control of the licensed activity. OPG shall also document the roles, responsibilities and functions of the units and sub-units of this organizational structure.

Safety Culture

Licensees shall ensure that the management of the organization supports the safe conduct of nuclear activities. The licensee shall ensure that sound nuclear safety is the overriding priority in all activities performed in support of the nuclear facilities and has clear priority over schedule, cost and production. A safety culture self-assessment methodology is developed following a continuous improvement process, which is governed by N-PROC-AS-0077, *Nuclear Safety Culture Assessment*.

The licensee's approach to worker safety is governed by OPG-PROG-0005, *Environment Health and Safety Managed Systems*, which defines the overall process for managing safety and the responsibilities of the parties, specifically at the corporate level.

Design Management

Paragraph 4(d) of the *Class I Nuclear Facilities Regulations* requires that a licence application to prepare a site contain the proposed quality assurance program for the design of the nuclear facility. OPG shall submit the proposed quality assurance program for the design of the nuclear facility to the CNSC within a time frame agreed upon between OPG and CNSC. The CNSC recognizes that the design management program would evolve as nuclear activities progress, and that the control of design aspects at the site preparation stage is managed through OPG's Design Management, N-PROG-MP-0009. It is expected that the quality assurance program for the design of the nuclear facility be reviewed and accepted by OPG, prior to submission to the CNSC.

Human Performance Management

In accordance with REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*, basic aspects of human performance management are addressed under the Management System.

Human performance relates to reducing the likelihood of human error in work activities. It refers to the outcome of human behaviour, functions and actions in a specified environment, reflecting the ability of workers and management to meet the system's defined performance under the conditions in which the system will be employed.

Human Factors are factors that influence human performance as it relates to the safety of a nuclear facility or activity over all design and operations phases. These factors may include the characteristics of the person, task, equipment, organization, environment, and training. The consideration of human factors in issues such as interface design, training, procedures, and organization and job design may affect the reliability of humans performing tasks under various conditions.

For clarification, CNSC regulatory oversight related to hours of work is for the purpose of "nuclear safety" not for the purpose of "worker protection." Worker protection is covered under the SCA "Conventional Health and Safety" (LC 8.1).

As defined by the *General Nuclear Safety and Control Regulations*, workers include contractors and temporary employees who perform work that is referred to in the licence. Training requirements apply equally to these types of workers as to the licensees' own employees.

The licensee shall implement and maintain initial and continuing training programs for all workers in accordance with CNSC regulatory document REGDOC-2.2.2, *Personnel Training*. All training programs related to workers in positions where the consequence of human error poses a risk to the environment, the health and safety of persons, or to the security of the nuclear facilities and licensed activities, are evaluated against the criteria for a systematic approach to training (SAT).

N-PROG-TR-0005, *Training*, describes OPG's controls to ensure workers are trained and assessed to confirm that they have acquired the knowledge, skills, and competencies to perform their work assignments. These controls include:

- the identification and definitions of qualifications and competencies required for each task including site specific requirements;
- the verification of personnel qualifications and competencies against defined qualification and competency requirements prior to permitting personnel to perform work on the site; and
- the documentation and maintenance of personnel qualification and competency records.

As described in deliverable D-P-6 (*Personnel Training Plan*) in the OPG commitments report, the EPC Co. Quality Management System (QMS) will include responsibilities for independent audits (in addition to those performed by OPG) of implementation of the QMS, and requirements for ensuring sufficient number of trained and qualified personnel.

OPG will review and accept the EPC's Quality Management system per the requirements of the OPG Commitments Report to ensure that the management system and training requirements are met.

Overall, as described in deliverable D-P-1, DNNP *Management System and Implementing Documents* in the OPG commitments report, OPG will build on the existing OPG Nuclear Management System to continue to govern site preparation activities. As described in deliverable D-P-4, *Quality Management Plan*, the EPC's plan will be compliant with OPG's over-arching plan developed for D-P-4. OPG will review and accept the EPC's Quality Management Plan as part of its oversight role.

MANAGEMENT SYSTEM

Recommendations and Guidance:

The management system should be used to promote and support a healthy safety culture. The CNSC recognizes the following characteristics that form the framework for a healthy safety culture:

- Safety is a clearly recognized value;
- Accountability for safety is clear;
- Safety is integrated into all activities;
- A safety leadership process exists; and
- Safety culture is learning-driven.

Additional information can be found in CNSC regulatory document REGDOC-2.1.1, *Management System.*

2 SCA – HUMAN PERFORMANCE MANAGEMENT

In accordance with REGDOC-1.1.1, the Human Performance Management SCA is not applicable at the site preparation stage of the project.

3 SCA – OPERATING PERFORMANCE

3.1 Conduct of site preparation activities

The Safety and Control Area "Operating Performance" includes an overall review of the conduct of the licensed activities and the activities that enable effective performance.

Licence Condition:

The licensee shall implement and maintain an operations program.

Preamble:

The *Class I Nuclear Facilities Regulations* require that a licence application contain the measures that will be taken to prevent or mitigate the effects on the environment and the health and safety of persons that may result from the activity to be licensed.

The *General Nuclear Safety and Control Regulations* require that an application for a licence shall contain, in addition to other information, "the activity to be licensed and its purpose."

As described in Part IV of the PRSL, the licence authorizes the licensee to prepare the Darlington Nuclear site, further described in OPG New Nuclear at Darlington Survey Drawing, NK054-DRAW-01210-00007, for the future construction and operation of a new nuclear generating station. The proposed nuclear facility site is located south of the Canadian National Railway's main line. Site preparation activities include:

- construction of site access control measures;
- clearing and grubbing of vegetation;
- excavation and grading of the site to a finished elevation of approximately +78 masl (metres above sea level);
- installation of services and utilities (domestic water, fire water, sewage, electrical, communications, natural gas) to service the future nuclear facility (from the point at which the equipment connects to equipment that serves the general purpose);
- construction of administrative and support buildings inside the future protected area surrounding the DNNP site, in accordance with the definition of a protected area in section 9 of the *Nuclear Security Regulations*;
- construction of environmental monitoring and mitigation systems; and
- construction of flood protection and erosion control measures.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-1.1.1	Site Evaluation and Site Preparation for New Reactor Facilities	2018	October 12, 2021

The EPC will prepare detailed work packages for the conduct of site preparation activities. OPG will review and accept these work packages prior to implementation and perform independent assessments, oversight, witnessing and surveillance of the EPC's work to ensure that site preparation requirements are met.

Recommendations and Guidance:

None.

3.2 Event reporting for site preparation

Licence Condition:

The licensee shall implement and maintain a program for reporting to the Commission, or person authorized by the Commission.

Preamble:

CNSC regulatory document REGDOC-3.1.1 has comprehensive reporting requirements for NPPs. It describes information that the CNSC needs to evaluate the performance of the facilities it regulates. This document is complementary to the reporting requirements in the *Nuclear Safety and Control Act* and the associated regulations, as well as to the additional reporting that may be required by specific projects and activities. Using a risk informed approach only specific sections of REGDOC-3.1.1 are applicable for LTPS.

Compliance Verification Criteria:

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
Conduct of Regulatory Affairs	N-PROG-RA-0002	No
Performance Improvement	N-PROG-RA-0003	No
Written Reporting to Regulatory Agencies	N-PROC-RA-0005	No
Preliminary Event Notifications	N-PROC-RA-0020	No

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-3.1.1	Reporting Requirements for Nuclear Power Plants (Sections 4.5 & 5, Appendix A)	2016	October 12, 2021

Scheduled Reports

Scheduled reporting requirements of REGDOC-3.1.1 are not applicable at the site preparation stage of the project.

Event Reports and Notifications

Where applicable, OPG shall make Preliminary and Detailed Reports in accordance with REGDOC-3.1.1, Section 5.

Events shall be assessed and reported per Event Notifications criteria as specified in Appendix A of REGDOC-3.1.1, and as clarified in CNSC document "*Interpretation of REGDOC-3.1.1 Reporting Requirements for Nuclear Power Plant*" Rev. 1, provided in e-doc 4525925.

N-PROG-RA-0002, *Conduct of Regulatory Affairs* describes OPG's controls for managing regulatory reporting to ensure the CNSC (and other regulatory agencies as appropriate) are made aware of adverse situations or events that may occur during the site preparation phase.

It is expected that all adverse events, both reportable and non-reportable, are investigated in accordance with N-PROG-RA-0003 and actions will be taken to correct the problem and to prevent or minimize recurrence. Annually, all reported events are expected to be included in the annual report of the licensed activities. Adverse events are for all licensed activities, including activities carried out by the EPC.

It is expected that the EPC will develop its own reporting protocol to OPG that will be reviewed by OPG for acceptance.

Annual Report for Site Preparation

The annual report assists the CNSC in the collection of information to assure that site preparation activities are being conducted in a manner that protects the health and safety of persons and the environment. In addition, the report assists the CNSC in the collection of information regarding the detailed site investigations and analyses that will be conducted during the site preparation phase to confirm the site characteristics and support the detailed design of the nuclear facility.

The deadline to submit the annual report will be May 1st of each year during the licence period. The annual report on the licensed activities shall include information from the previous calendar year and shall include, but not be limited to, the following information:

- Principal site preparation activities completed;
- Environmental monitoring program results;
- Environmental assessment follow-up program results;
- Implementation status of commitments made during the Joint Review Panel process;
- Detailed site investigation program results;
- Summary of reportable events and actions taken to prevent recurrence;
- Summary of changes to organization, programs, procedures and associated documents;
- Summary of permits or authorizations applied for or obtained from other (non-CNSC) regulatory agencies;

OPERATING PERFORMANCE

- Public information initiatives;
- Updated project schedule; and
- Other supporting activities.

Recommendations and Guidance:

None.

4 SCA – SAFETY ANALYSIS

4.1 Safety Analysis Program

The safety and control area "Safety Analysis" covers maintenance of the safety analysis that supports the overall safety case for the facility. Safety analysis is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or facility and considers the effectiveness of preventative measures and strategies in reducing the effects of such hazards.

Licence Condition 4.1:

The licensee shall implement and maintain a safety analysis program.

Preamble:

The *General Nuclear Safety and Control Regulations* require that a licence application contain a description and the results of any analyses performed.

A deterministic safety analysis evaluates the NPP's responses to events by using predetermined rules and assumptions (conservative or best-estimate methods).

Probabilistic safety assessment (PSA) is a comprehensive and integrated assessment of the safety of the nuclear power plant that, by considering the initial plant state and the probability, progression, and consequences of equipment failures and operator response, derives numerical estimates of a consistent measure of the safety of the design. Such assessments are most useful in assessing the relative level of safety.

CSA standard N286.7, *Quality assurance of analytical, scientific and design computer programs for nuclear power plants*, provides the specific requirements related to the development, modification, maintenance and use of computer programs used in analytical, scientific and design applications. These requirements apply to the design, development, modification and use of computer programs that are used in analytical, scientific and design applications at nuclear power plants.

The plant parameter envelope (PPE) provides a bounding envelope of plant design and site characteristics that was used in the DNNP EA and 2009 application. It relates to the interaction between a nuclear power plant and the site/environment; and, along with calculations of releases to the environment and doses to persons, characterizes the effects of the facility on persons and the environment, as predicted in the EA and 2009 application.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-1.1.1	Site Evaluation and Site Preparation for New Reactor Facilities	2018	October 12, 2021
N286.7	Quality assurance of analytical, scientific and design computer programs for nuclear power plants	1999 (Reaffirmed 2012)	October 12, 2021

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
Reactor Safety Program	N-PROG-MP-0014	No

Safety Analysis is governed under OPG's Reactor Safety Program PROG-MP-0014. Safety analysis shall conform to the requirements of REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities.*

OPG shall demonstrate that the selected nuclear reactor technology and updated site parameters have been taken into account in an assessment that demonstrates the effects predicted in the EA and the 2009 application are met. OPG's demonstration is to be in accord with the requirements and guidance of REGDOC 1.1.1.

OPG deliverable D-P-9 *Site Geotechnical and Seismic Hazard Investigation Program* requires OPG to complete additional geotechnical and seismic hazard assessments prior to commencing site preparation activities. OPG deliverable D-P-9.2 requires OPG to submit a geotechnical report detailing the assessment results prior to excavation activities. OPG deliverables D-P-9.3 and D-P-9.4 require OPG to submit geotechnical and seismic hazard reports for foundations and structures as part of a licence to construct application.

Recommendations and Guidance:

Safety analysis work supporting site preparation considers:

- International Atomic Energy Agency (IAEA), NS R 3 (Rev 1), Site Evaluation for Nuclear Installations, 2016; and
- IAEA, Safety Standards Series, Specific Safety Guide No. SSG-18, Meteorological and Hydrological Hazards in Site Evaluation for Nuclear Installations, Vienna, Austria, 2011.

SAFETY ANALYSIS

5 SCA – PHYSICAL DESIGN

5.1 Design Program

The safety and control area "Physical Design" relates to activities that impact on the ability of systems, components, and structures to meet and maintain their design basis given new information arising over time and taking changes in the external environment into account.

Licence Condition 5.1:

The licensee shall implement and maintain a design program.

Preamble:

The *Class I Nuclear Facilities Regulations* require that a licence application contains a description of the site of the activity to be licensed, including the location of any exclusion zone and any structures within that zone. In addition, the application contains plans showing the location, perimeter, areas, structures and systems of the nuclear facility.

A design program ensures that the design is managed using a well-defined systematic approach.

At the site preparation stage, physical design focuses on:

- The exclusion zone and emergency planning zones: the exclusion zone size is characterized based on a combination of dose limits, security and robustness design considerations, meteorological conditions, and emergency preparedness considerations that are affected by the land use around the site;
- Civil structures and civil works: civil structures and the establishment of containment dykes, retaining walls, earthworks for flood protection and erosion control; and
- The layout of areas, structures, and systems: the proposed layout of structures in the final layout state includes but is not limited to:
    - satellite or aerial photographs of the site and surrounding region, including the proposed exclusion zone and site boundary;
    - proposed layouts of structures;
    - proposed conventional and radiological waste transfer and storage areas;
    - layouts of all site roads and proposed transmission corridors; and
    - locations of transportation corridors in the vicinity of the site.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-1.1.1	Site Evaluation and Site Preparation for New Reactor Facilities	2018	October 12, 2021
REGDOC-2.5.2	Design of Reactor Facilities: Nuclear Power Plants (for site preparation design management only; Sections 5.1 to 5.3 only)	2014	October 12, 2021
NBCC	National Building Code of Canada	2020	October 12, 2021
NFC	National Fire Code of Canada	2020	October 12, 2021

For the application for a Licence to Construct, CNSC staff and OPG agreed to a code freeze date of December 31, 2021. Therefore, the 2020 editions of both the *National Building Code of Canada* and the *National Fire Code of Canada* are the editions applicable to activities conducted under the Licence to Prepare Site.

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
Design Management	N-PROG-MP-0009	No
Conduct of Engineering	N-STD-MP-0028	No

Criteria pertaining to the establishment of exclusion zone, and emergency planning zones are provided in:

- REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*;
- REGDOC-2.5.2, *Design of Reactor Facilities: Nuclear Power Plants;* and
- CSA N288.2, *Guidelines for Calculating the Radiological Consequences to the Public of a Release of Airborne Radioactive Material for Nuclear Reactor Accidents*

The design features for the site preparation will address the mitigation measures as described in deliverables under D-P-3, in the OPG commitments report.

PHYSICAL DESIGN

OPG will review and accept the EPC's engineering submissions for works such as grading, lake infill and flood protection and erosion control measures, to ensure the EPC has a clear understanding and knowledge of the requirements.

As described in deliverable D-P-9, Site Geotechnical and Seismic Hazard Investigation Program in the commitment report, OPG will carry out additional field investigation programs at the planned earth structure locations which will be necessary for detailed analyses and design as part of the confirmatory stage in order to ensure that the anticipated earth structures are sound, for example, stable against slope failure and significant movements.

Criteria pertaining to the layout of areas, structures and systems are provided in:

- REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*; and
- REGDOC-2.5.2, *Design of Reactor Facilities: Nuclear Power Plants;*

Control of design aspects at the site preparation stage is managed through *Design Management*, N-PROG-MP-0009.

The utilities and services installed during site preparation are non-nuclear safety related. If any of the utilities and services are to be credited in the safety case, they shall demonstrate they meet the applicable nuclear-grade requirements.

Recommendations and Guidance:

None.

6 SCA – FITNESS FOR SERVICE

In accordance with REGDOC-1.1.1, the Fitness-for-Service SCA is not applicable at the site preparation stage of the project.

7 SCA – RADIATION PROTECTION

7.1 Radiation Protection Program

The safety and control area "Radiation Protection" covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations*. This program must ensure that contamination and radiation doses received are monitored and controlled and maintained as low as reasonably achievable (ALARA).

Licence Condition 7.1:

The licensee shall implement and maintain a radiation protection program.

Preamble:

The *Radiation Protection Regulations* require that the licensee implement a radiation protection program and also ascertain and record doses for each person who performs any duties in connection with any activity that is authorized by the *Nuclear Safety and Control Act* or is present at a place where that activity is carried on. This program must ensure that doses to workers do not exceed prescribed dose limits and are kept as low as reasonably achievable (the ALARA principle), social and economic factors being taken into account.

Note that the regulatory dose limits are explicitly provided in the *Radiation Protection Regulations*.

Compliance Verification Criteria

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
Darlington New Nuclear Project – Health and Safety Plan	NK054-PLAN-01210-00034	No

Doses of radiation received by or committed to workers at the DNNP site during site preparation activities shall be ascertained, monitored, and controlled below CNSC regulatory dose limits for persons not considered as Nuclear Energy Workers (NEW), consistent with OPG document NK054-PLAN-01210-00034 – *Darlington New Nuclear Project – Health and Safety Plan* and paragraphs 4(b)(iii) and 5(2)(b) of the *Radiation Protection Regulations*. OPG shall provide confirmation to the CNSC, on an annual basis, that the estimated incremental dose (above background) to workers on the DNNP project site are below regulatory dose limits for persons who are not considered as NEWs.

If nuclear substances above exemption quantities are encountered during site preparation activities, OPG shall monitor and control radiological exposures to persons consistent with radiation protection measures in place at OPG's nuclear facilities.

Recommendations and Guidance

Refer to CNSC REGDOC-2.7.1, *Radiation Protection* and CNSC REGDOC-2.7.2, *Dosimetry, Volume 1: Ascertaining Occupational Dose* for additional information.

8 SCA – CONVENTIONAL HEALTH AND SAFETY

8.1 Occupational health and safety for site preparation

The Safety and Control Area "Conventional Health and Safety" covers the implementation of a program to manage workplace safety hazards and to protect personnel and equipment.

Licence Condition:

The licensee shall implement and maintain a conventional health and safety program.

Preamble:

The *Class I Nuclear Facilities Regulations* require that a licence application contain the proposed worker health and safety policies and procedures.

NPPs in Ontario are regulated by the *Ontario Occupational Health and Safety Act* and the *Labour Relations Act*.

With respect to the accountabilities and responsibilities under OHSA, OPG assumes the role and responsibilities of "Project Owner" (*s.30*), and the selected EPC assumes the role and responsibilities of "Constructor" (*s.23*) and "Employer" (*s. 25 and 26*). The requirements of OHSA are administered by the Ontario Ministry of Labour.

Compliance Verification Criteria:

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
Health and Safety Policy	OPG-POL-0001	No
Environment Health and Safety Managed System	OPG-PROG-0005	No
Respiratory Protection	OPG-PROC-0132	No
Darlington New Nuclear Project – Health and Safety Plan	NK054-PLAN-01210-00034	No

The licensee is responsible for safety at all times. The licensee shall ensure that contractors and other organizations present on site are informed of and uphold their roles and responsibilities related to conventional health and safety.

As described in deliverable D-P-2 *Occupational Health and Safety Plan* in the OPG commitments report, the EPC is to prepare an occupational health and safety procedures/instructions to ensure that workers will be protected against health and safety hazards encountered during site preparation activities. The EPC procedures/instructions are to conform to OPG's plan developed for D-P-2. OPG will review EPC's Health and Safety procedures/instructions and maintain oversight to ensure the requirements of applicable law, Good Industry Management Practice and the requirements of the application for the licence to prepare site are implemented.

Recommendations and Guidance:

Additional information can be found in CNSC regulatory document REGDOC-2.8.1, *Conventional Health and Safety.*

9 SCA – ENVIRONMENTAL PROTECTION

9.1 Environmental protection for site preparation

The Safety and Control Area "Environmental Protection" covers programs that identify, control, and monitor all releases of radioactive and hazardous substances and effects on the environment from facilities or as the result of licensed activities.

Licence Condition:

The licensee shall implement and maintain an environmental protection program.

Preamble:

The *Class I Nuclear Facilities Regulations* set out requirements related to environmental protection that must be met by the applicant.

The *General Nuclear Safety and Control Regulations* require every licensee to take all reasonable precautions to protect the environment and to control the release of nuclear substances or hazardous substances within the site of the licensed activity and into the environment as a result of the licensed activity.

The *Radiation Protection Regulations* prescribe the radiation dose limits for the general public of 1 mSv per calendar year.

CNSC REGDOC-2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures, Version 1.1*, 2017, describes the principles and factors that guide the CNSC in regulating the development, production and use of nuclear energy and the production, procession and use of nuclear substances, prescribed equipment and prescribed information in order to prevent unreasonable risk to the environment in a manner that is consistent with Canadian environmental policies, acts and regulations and with Canada's international obligations.

The release of hazardous substances is regulated by the Ministry of Environment, Conservation and Parks, and Environment and Climate Change Canada (ECCC) through various acts and regulations, as well as the CNSC.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-1.1.1	Site Evaluation and Site Preparation for New Reactor Facilities	2018	October 12, 2021
N288.5	Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills	2011	October 12, 2021
REGDOC-2.9.1	Environmental Protection: Environmental Principles, Assessments and Protection Measures, Version 1.1	2017	October 12, 2021
N288.4	Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills	2010	October 12, 2021
N288.7	Groundwater protection programs at Class I nuclear facilities and uranium mines and mills	2015	December 31, 2022
N288.6	Environmental risk assessments at Class I nuclear facilities and uranium mines and mills	2012	October 12, 2021

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
Monitoring of Nuclear and Hazardous Substances in Effluents	N-STD-OP-0031	No
Environmental Approvals	N-PROC-OP-0037	No
Environmental Policy	OPG-POL-0021	No
Environment Health and Safety Managed Systems	OPG-PROG-0005	No
Contaminated Lands and Groundwater Management	N-PROC-OP-0044	No
Hazardous Material Management	OPG-PROC-0126	No
Management of the Environmental Monitoring Programs	N-PROC-OP-0025	No
Environmental Monitoring and Environmental Assessment Follow-Up for the Darlington New Nuclear Project	NK054-PLAN-07730-00014	No

The licensee shall implement and maintain an environmental protection program in accordance with:

- CNSC regulatory document REGDOC-2.9.1, *Environmental Protection Policies, Programs and Procedures*;
- CNSC regulatory document REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities;*
- CSA standard N288.4, *Environmental Monitoring Program at Class I Nuclear Facilities and Uranium Mines and Mills*;
- CSA standard N288.5, *Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills*;
- CSA standard N288.6, *Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills;* and
- CSA standard N288.7, *Groundwater Protection Programs at Class I Nuclear Facilities and Uranium Mines and Mills*.

Effluent and Emission Control:

The licensee shall ensure effluent monitoring for nuclear (if any are encountered above exemption quantities) and hazardous substances is designed, implemented, and managed to respect applicable laws and to incorporate best practices. The effluent monitoring program shall provide for control of airborne and waterborne effluents. Effluent monitoring is a risk-informed

activity which assures quantifying of the important releases of the nuclear and hazardous substances into the environment.
OPG's DNNP Program shall be compliant with CSA N288.5 *Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills*.

Nuclear Substances:

If nuclear substances above exemption quantities are encountered during site preparation activities, appropriate measures will need to be put in place to monitor and control any gaseous and liquid releases to the environment effluents including the development and implementation of Derived Release Limits and Environmental Action Levels for radioactive material releases.

Hazardous Substances:

The licensee shall control hazardous substances releases according to the limits defined in the licensing basis in accordance with the applicable environmental compliance approvals, provincial and other federal legislation and take action to investigate and correct the cause(s) of increased releases.

Environmental Management System:

The objective of the environmental protection policies, programs and procedures is to establish adequate provisions for protection of the environment. This shall be accomplished through an integrated set of documented activities of an environmental management system (EMS).
OPG shall implement and maintain an environmental management program to assess environmental risks associated with its nuclear activities, and to ensure these activities are conducted in such a way that adverse environmental effects are prevented or mitigated. OPG environmental management program shall be compliant with REGDOC-2.9.1, *Environmental Protection Policies, Programs and Procedures*, version 1.1, 2017.

OPG shall ensure that all aspects of its environmental management program are effectively implemented in order to ensure compliance with environmental regulatory requirements and expectations, including those set in the International Organization for Standardization 14001, *Environmental Management Systems*. OPG's EMS is registered to the ISO-14001. Having the ISO-14001certification is not part of the CNSC requirement; however, it shows that a third party recognized OPG's EMS as being in accordance with the standard.

OPG-POL-0021, *Environmental Policy*, and OPG-PROG-0005, *Environment Health and Safety Managed Systems*, are key documents of the "Environmental Protection" program.

As described in deliverable D-P-3 (*Environmental Management and Protection Plans*) in the OPG commitments report, OPG is to prepare an Environmental Management and Protection Plan to ensure that site preparation activities are performed in a manner that protects the environment. The Environmental Management and Protection Plan will include, but not be limited to, measures for erosion and sediment control, spill prevention and response, nuisance effects (dust and noise), and storm water management.

OPG will review the EPC's Environmental Management and Protection procedures/instructions, performance of independent assessments, oversight, witnessing and surveillance of the EPC's work activities to ensure that environmental requirements are met.

Assessment and Monitoring:

An environmental monitoring program consists of a risk-informed set of integrated and documented activities to sample, measure, analyze, interpret, and report the following:

- The concentration of hazardous and/or nuclear substances in environmental media to assess one or both of:
  - Exposure of receptors to those substances; and
  - The potential effects on human health, safety, and the environment.
- The intensity of physical stressors and/or their potential effect on human health and the environment; and
- The physical, chemical, and biological parameters of the environment normally considered in design of the EMP.

OPG's Environmental Monitoring Program shall be compliant with CSA N288.4-2010 *Environmental monitoring programs at Class I Nuclear Facilities and Uranium Mines and Mills*.

Groundwater Monitoring:

OPG shall be compliant with CSA N288.7-2015, *Groundwater Protection Programs at Class I Nuclear Facilities and Uranium Mines and Mills*. Changes made as a result of the implementation of CSA N288.7 should be documented and reflected the first annual compliance report following implementation.

Protection of the Public:

This aspect relates to the assessment of predicted human health effects associated with measured and potential quantities of hazardous substances in the environment (abiotic and biotic) from the DNNP. This aspect is linked to the "Dose to the Public" SPA as well as the "Environmental Risk Assessment" SPA.

Environmental Risk Assessment:

In accordance with CSA N288.4 and N288.5, an ERA establishes the basis for both the environmental monitoring program and the effluent monitoring program. The ERA shall be updated periodically with the results from the environmental and effluent monitoring programs in order to confirm the effectiveness of any additional mitigation measures needed.

The DNNP ERA shall be compliant with CSA N288.6- 2012 *Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills*.

Recommendations and Guidance:

Guiding principles and factors for CNSC staff consideration are also given in CNSC regulatory document REGDOC-2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures, Version 1.2*, 2020.

CSA N288.8, *Establishing and Implementing Action Levels for Releases to the Environment from Nuclear Facilities*, 2017 should be considered with respect to setting environmental action levels. It is recommended that the licensee provide to the CNSC a copy of the reports sent to the Ministry of the Environment, Conservation and Parks, and Environment and Climate Change Canada on hazardous releases.

10 SCA – EMERGENCY MANAGEMENT AND FIRE PROTECTION

10.1 Emergency preparedness for site preparation

The Safety and Control Area "Emergency Management and Fire Protection" covers emergency plans and emergency preparedness programs which exist for emergencies and for non-routine conditions. This also includes any results of exercise participation.

Licence Condition:

The licensee shall implement and maintain an emergency preparedness program.

Preamble:

A portion of the DNNP site is located within the exclusion zone of the existing Darlington Nuclear Generating Station (DNGS). As a result, it is subject to the requirements of the emergency preparedness program for DNGS. Should a nuclear emergency occur at the DNGS, DNGS will maintain the legal authority to exercise control within the DNGS exclusion zone per the *Class I Nuclear Facilities Regulations*.

NK054-PLAN-01210-00002, *DNNP Nuclear Emergency Preparedness Plan* describes OPG's controls, such as notification, protective actions, sheltering and evacuation in the event of a nuclear emergency at the adjacent DNGS. OPG will ensure that all Contractors supporting DNNP are compliant with NK054-PLAN-01210-00002, through the acceptance of the Contractors' Site-Specific Safety Plan.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-1.1.1	Site Evaluation and Site Preparation for New Reactor Facilities	2018	October 12, 2021

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
Consolidated Nuclear Emergency Plan	N-PROG-RA-0001	Yes

OPG's safety and control measures for emergency preparedness and fire protection shall be in compliance with clause 7.9.7 of CSA N286-12.

EMERGENCY MANAGEMENT AND FIRE PROTECTION

Recommendations and Guidance:

None.

10.2 Fire Protection Program

Licence Condition 10.2:

The licensee shall implement and maintain a fire protection program.

Preamble:

Licensees require a comprehensive Fire Protection Program to ensure the licensed activities do not result in unreasonable risk to the health and safety of persons and to the environment due to fire and to ensure that the licensee is able to efficiently and effectively respond to emergency fire situations.

Compliance Verification Criteria:

Fire Response

As described in deliverable D-P-5 *Emergency Management and Fire Protection Plans* in the OPG commitments report, OPG will ensure that all EPCs supporting DNNP are compliant to Ontario's occupational health and safety laws and with OPG's plan developed for D-P-5. OPG will review and accept the EPC prepared Site-Specific Safety Plan which will include Fire Prevention and Response.

Document Version Control:

None

Recommendations and Guidance:

None

11 SCA – WASTE MANAGEMENT

11.1 Waste management for site preparation

The Safety and Control Area "Waste Management" covers internal waste-related programs which form part of the facility's (or licensed activities) operations up to the point where the waste is removed from the facility (or site) to a separate waste management facility. This also covers the planning for decommissioning.

Licence Condition:

The licensee shall implement and maintain a waste management program.

Preamble:

The *General Nuclear Safety and Control Regulations* require that a licence application contain information related to the in-plant management of radioactive waste or hazardous waste resulting from the licensed activities.

The *Class I Nuclear Facilities Regulations* require that a licence application contain the proposed procedures for handling, storing, loading and transporting nuclear substances and hazardous substances.

The activities encompassed under the PRSL will not involve the handling of radioactive materials and will not generate any radioactive wastes. Hazardous wastes generated as a result of site preparation activities will be limited to those used for standard construction projects.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-1.1.1	Site Evaluation and Site Preparation for New Reactor Facilities	2018	October 12, 2021

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
Environment Health And Safety Managed Systems	OPG-PROG-0005	No

If nuclear substances above exemption quantities are encountered during site preparation activities, appropriate measures, such as OPG's *Nuclear Waste Management* program (W-PROG-WM-0001), will need to be put in place to manage any radioactive waste generated. In addition, appropriate measures for packaging and transport of nuclear substances will need to be put in place.

As discussed under the Environmental Protection SCA, OPG is to prepare an Environmental Management and Protection Plan which will include measures for hazardous waste management (Deliverable D-P-3.6 in OPG's commitment report).

Recommendations and Guidance:

None.

11.2 Preliminary decommissioning plan for site preparation

Licence Condition:

The licensee shall implement and maintain a decommissioning plan.

Preamble:

Paragraph 3(k) of the *Class I Nuclear Facilities Regulations* require that a licence application contain the proposed plan for the decommissioning of the nuclear facility or of the site.

This LC requires that the licensee maintain a Preliminary Decommissioning Plan (PDP). A PDP provides an overview of the proposed decommissioning approach that is sufficiently detailed to assure that the proposed approach is, in light of existing knowledge, technically and financially feasible, and appropriate in the interests of health, safety, security and the protection of the environment. The PDP defines areas to be decommissioned and the general structure and sequence of the principle work packages. The PDP forms the basis for establishing and maintaining a financial arrangement (financial guarantee – see LC G.5) that will assure adequate funding of the decommissioning plan.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
N294	Decommissioning of facilities containing nuclear substances	2009	October 12, 2021

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
Decommissioning Program	W-PROG-WM-0003	Yes
Preliminary Decommissioning Plan OPG New Nuclear at Darlington Site – Site Preparation	NK054-PLAN-00960-00001	Yes

The decommissioning plan shall be kept current to reflect any changes in the site or nuclear facility. The decommissioning plan shall be revised at a minimum every five years, unless specified otherwise by the Commission. OPG submitted the initial revision of the PDP in 2021 for CNSC review. OPG's next scheduled submission of the PDP for the Darlington New Nuclear Project is due to the CNSC in 2026.

Recommendations and Guidance:

Document Title	Document #	Organization
Decommissioning Planning for Licensed Activities	G-219	CNSC
Financial Guarantees for the Decommissioning of Licensed Activities	G-206	CNSC

12 SCA – SECURITY

12.1 Security for site preparation

The Safety and Control Area "Security" covers the programs required to implement and support the security requirements stipulated in the regulations, in their licence, in orders, or in expectations for their facility or activity.

Licence Condition:

The licensee shall implement and maintain a security program.

Preamble:

The *General Nuclear Safety and Control Regulations* require that a licence application contain information related to site access control and measures to prevent loss or illegal use, possession or removal of the nuclear substance, prescribed equipment or prescribed information.

The *Class I Nuclear Facilities Regulations* require that a licence application contain the proposed measures to prevent acts of sabotage or attempted sabotage at the nuclear facility.

OPG's security measures are expected to mitigate potential security risks through a series of physical security installations at the DNNP site combined with programmatic security measures designed to mitigate:

- Security threats, risks, and vulnerabilities identified in the Site Selection Threat Risk Assessment Report.

Site preparation will be occurring within the DNNP controlled area, with local access to work areas controlled by EPC contractor's staff. The DNGS controlled area, including the DNNP site, is subject to regular controlled area NSO patrol. There will be no specific NSO assignments to site preparation work, however current security program activities and responses cover the DNGS site as a whole.

As such, the security program implemented for DNNP will be revised as required to address regulatory requirements associated with the project as it progresses. OPG will implement security measures appropriate for each phase of the project to ensure compliance with the Nuclear Security Regulations, General Nuclear Safety and Control Regulations, related security regulatory documents and applicable codes and standards, as well as any additional measures required to protect the nuclear facility, nuclear and radioactive material, prescribed information and prescribed equipment against security risks identified in the Site Security Threat and Risk Assessment.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-1.1.1	Site Evaluation and Site Preparation for New Reactor Facilities	2018	October 12, 2021
REGDOC-2.12.2	Site Access Security Clearance	2013	October 12, 2021
N290.7	Cyber security for nuclear power plants and small reactor facilities	2014	October 12, 2021

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
Darlington Nuclear Generating Station Security Report	8300-REP-61400-10003	Yes
Nuclear Security	N-PROG-RA-0011	Yes
Cyber Security	OPG-PROG-0042	No
Cyber Security	N-PROC-RA-0135	No

The licensee shall implement and maintain programs to ensure security of the nuclear facility. These programs shall comply with the requirements set out in REGDOC-2.12.2, *Site Access Security Clearance*.

Licensee shall develop, implement, and maintain a cyber-security program to protect the cyber assets that perform or impact nuclear safety, nuclear security, emergency preparedness, or safeguard functions from cyber-attack. The cyber security program shall be in accordance with CSA N290.7, *Cyber security for nuclear power plants and small reactor facilities*.

As described in deliverable D-P-7 Site Security Plan NK054-PLAN-61400-00001 of the OPG commitments report, the EPC will prepare a Site Access and Security Protocol. OPG will review and accept the EPC's Site Access and Security Protocol prior to the commencement of the licensed activities.

Recommendations and Guidance:

Guidance may be obtained in the following IAEA Nuclear Security Series documents:

- IAEA Nuclear Security Series No. 4, *Technical Guidance: Engineering Safety Aspects of the Protection of Nuclear Power Plants Against Sabotage;*
- IAEA Nuclear Security Series No.13, *Recommendations: Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5);*
- IAEA Nuclear Security Series No. 17-T, *Technical Guidance: Computer Security Techniques for Nuclear Facilities;*
- IAEA Nuclear Security Series No. 23-G: *Security of Nuclear Information;*
- IAEA Nuclear Security Series No. 33-T: *Computer Security of Instrumentation and Control Systems at Nuclear Facilities;*
- IAEA Nuclear Security Series No. 42-G: *Computer Security for Nuclear Security*
- IAEA TDL-005: *Computer Security Incident Response Planning at Nuclear Facilities;* and
- IAEA TDL-006: *Conducting Computer Security Assessments at Nuclear Facilities.*

13 SCA – SAFEGUARDS AND NON-PROLIFERATION

13.1 Safeguards Program

The safety and control area "Safeguards and Non-Proliferation" covers the programs required for the successful implementation of the obligations arising from the Canada/IAEA Safeguards Agreement, as well as all other measures arising from the *Treaty on the Non-Proliferation of Nuclear Weapons*.

Licence Condition 13.1:

The licensee shall implement and maintain a safeguards program.

Preamble:

Safeguards is a system of inspection and other verification activities undertaken by the IAEA in order to evaluate a state's compliance with its obligations pursuant to its safeguards agreements with the IAEA.

Canada has entered into a Safeguards Agreement and an Additional Protocol (hereafter referred to as "safeguards agreements") with the IAEA pursuant to its obligations under the *Treaty on the Non-Proliferation of Nuclear Weapons* (INFCIRC/140). The objective of the Canada-IAEA safeguards agreements is for the IAEA to provide assurance on an annual basis to Canada and to the international community that all declared nuclear materials are in peaceful, non-explosive uses and that there is no indication of undeclared nuclear materials or activities. This conclusion confirms that Canada is in compliance with its obligations under the following Canada-IAEA safeguards agreements:

- *Agreement Between the Government of Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons*; and
- *Protocol Additional to the Agreement Between Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons.*

These are reproduced in information circulars INFCIRC/164, and INFCIRC/164/Add. 1.

The *General Nuclear Safety and Control Regulations* require the licensee to take all necessary measures to facilitate Canada's compliance with any applicable safeguards agreement and defines reporting requirements for safeguards events.

The *Class I Nuclear Facilities Regulations* require that a licence application contain information on the licensee's proposed measures to facilitate Canada's compliance with any applicable safeguards agreement.

OPG has submitted a Design Information Questionnaire (DIQ) for review in order to meet the CNSC requirement to provide preliminary safeguards information for the facility. The review of the DIQ will be conducted by the IAEA as part of the application for a Licence to Construct.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-2.13.1	Safeguards and Nuclear Material Accountancy	2018	October 12, 2021

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
Nuclear Safeguards	N-PROG-RA-0015	Yes

Regulatory document REGDOC-2.13.1, *Safeguards and Nuclear Material Accountancy,* sets out requirements and guidance for safeguards programs. The requirements and guidance in this document are essential to Canada's compliance with the safeguards agreements entered into with the IAEA.. During the LTPS, OPG shall, inter alia, make annual declarations pursuant to the Additional Protocol on general plans for the succeeding 10-year period relevant to the development of the nuclear fuel cycle and provide access and assistance to IAEA inspectors.

Additionally, the import and export of controlled nuclear substances, equipment and information identified in the *Nuclear Non-proliferation Import and Export Control Regulations* require separate authorization from the CNSC, consistent with the *General Nuclear Safety and Control Regulations*. The guidance to seek such an authorization is provided in REGDOC-2.13.2 - *Import and Export, version 2*.

Recommendations and Guidance:

None.

14 SCA – PACKAGING AND TRANSPORT

14. 1 Packaging and Transport Program

In accordance with REGDOC-1.1.1, the Packaging and Transport SCA is not applicable at the site preparation stage of the project.

15 SITE SPECIFIC

15.1 Mitigation measures and commitments for site preparation

Licence Condition:

The licensee shall implement the mitigation measures proposed and commitments made during the Darlington Joint Review Panel process, including the applicable recommendations of the Darlington Joint Review Panel Report, in accordance with the Government of Canada response.

Preamble:

The federal Minister of the Environment and the President of the CNSC established a JRP to assess the environmental effects of the DNNP under the *Canadian Environmental Assessment Act* (CEAA) and to review OPG's application for a Licence to Prepare Site under the *Nuclear Safety and Control Act.*

Taking into consideration the JRP Report recommendations and the implementation of proposed mitigation measures, the Government of Canada (GOC) determined that the DNNP is not likely to cause significant adverse environmental effects.

The JRP Report presented 67 recommendations directed across responsible authorities (RAs) and federal authorities (FAs), as well as the GOC, the Government of Ontario, the Municipality of Clarington and OPG. In its response, the GOC has accepted or accepted the intent of all of the JRP recommendations within its jurisdiction. The GOC Response to the JRP recommendations is presented in Appendix C of this LCH.

The majority of the JRP recommendations are directed to RAs and FAs to require OPG to implement mitigation measures, conduct a specific follow-up or monitoring study, or other similar activities.

The JRP recommendations as well as commitments in:

- Environmental Impact Statement (EIS);
- Licence to Prepare Site (LTPS) Application;
- DNNP Joint Review Panel (JRP) review process;
- Applications to other Federal regulatory agencies filed by OPG; and
- Aggregate Assessment Report for the Darlington New Nuclear Project Power Reactor Site Preparation Licence Renewal.

have been consolidated in the *Darlington New Nuclear Project Commitments Report*, NK054-REP-01210-00078.

The mitigation measures and commitments have been consolidated into specific deliverables reflecting the three major CNSC licence phases in which they will be completed (Licence to

Prepare Site, Licence to Construct, and Licence to Operate). Each deliverable contains the specific scope of the deliverable and the completion milestone.

Compliance Verification Criteria:

Licensee documents that require notification of change

Document Title	Document #	Prior Notification
Darlington New Nuclear Project Commitments Report	NK054-REP-01210-00078	Yes

OPG shall implement the mitigation measures proposed and commitments made during the JRP process, in accordance with the OPG commitments report. Appendix C lists all JRP Recommendations, the Government of Canada response and the OPG commitment that is addressing the recommendation and other related commitments.

The following table identifies the JRP recommendations and associated OPG commitments applicable to site preparation:

Recommendation #	Topic	OPG Commitment
2	Soil Quality	D-P-3.6
6	Preliminary Decommissioning Plan	D-P-13.1
7	Financial Guarantee	D-P-13.2
8	Air Quality	D-P-3.10, D-P-12.2
9	Noise	D-P-3.2
12	Water and Sediment Quality	D-P-12.3
13	Water Quality	D-P-12.3
16	Storm Water Discharges	D-P-3.4
20	Site Layouts	D-P-3.7, D-P-14.1
22	Insects, Amphibians, Reptiles and Mammal	D-P-12.5
25	Least Bittern	D-P-3.7, D-P-12.5
47	Traffic Management	D-P-10.1
5	Bluff Removal or Lake Infill	D-P-3.8, D-P-14.1, D-P-16.1
10	Geotechnical	D-P-9.1
19	Groundwater	D-P-12.6
21	Loss of Ponds	D-P-3.7
24	Birds	D-P-3.7
27	Bank Swallows	D-P-3.8
30	Impingement and Entrainment Sampling - Once Through Cooling	D-P-12.4, D-P-15.1
31	Lake Infill	D-P-14.1, D-P-16.1
38	Geotechnical	D-P-9.1, D-P-9.4
41	Socio-Economic Impacts	D-P-17.1
11	Soil Quality	D-P-12.6
28	Aquatic	D-P-12.4, D-P-15.1
29	Aquatic	D-P-12.4, D-P-15.1
33	Aquatic	D-P-12.4
42	Aboriginal Programs	D-P-17.1
56	Ambient Air Monitoring	D-P-12.2

OPG shall submit documentation for the following deliverables as described in the OPG commitments report.

Deliverables ID	Deliverable and sub-Deliverables listed therein
D-P-1	DNNP Management System and Implementing Documents
D-P-2	Occupational Health and Safety Plan
D-P-3	Environmental Management and Protection Plans
D-P-4	Quality Management Plan
D-P-5	Emergency Management and Fire Protection Plans
D-P-6	Personnel Training Plan
D-P-7	Site Security Plan
D-P-8	Level 1 and Level 2 Project Management Schedule
D-P-9	Site Geotechnical and Seismic Hazard Investigation Program
D-P-10	Traffic Management Plan
D-P-12	Environmental Monitoring and Environmental Assessment Follow-up
D-P-13	Preliminary Decommissioning Plan and Financial Guarantee
D-P-14	Fish Habitat Compensation Plan
D-P-15	Round Whitefish Action Plan
D-P-16	Lake Infill Design
D-P-17	Communications, Consultation and Stakeholder Relations Program
D-P-18	Proposed Layout of Structures in the Final Layout State (to the extent practicable)

Recommendations and Guidance:

None.

15.2 Environmental assessment follow-up program for site preparation

Licence Condition:

The licensee shall implement and maintain an environmental assessment follow-up program.

Preamble:

Paragraph 14 (c) of the *Canadian Environmental Assessment Act* (CEAA, 1992) stipulates that the environmental assessment process includes, where applicable, "the design and implementation of a follow-up program." The *CEAA* defines "follow-up program" as a program for:

- Verifying the accuracy of the environmental assessment of a project; and
- Determining the effectiveness of any measures taken to mitigate the adverse environmental effects of the project.

Compliance Verification Criteria:

OPG shall develop the final scope of the EA follow-up program through a consultative process with the CNSC, Environment and Climate Change Canada, Department of Fisheries and Oceans, Transport Canada and Indigenous communities.

OPG's Environmental Assessment Follow-up Program is to be reflective of "*Follow-up Programs under the Canadian Environmental Assessment Act"* (https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/follow-programs-under-canadian-environmental-assessment-act.html).

The follow-up program is to:

- Identify adequate baseline characterization data for use in follow-up monitoring;
- Verify predictions of environmental effects identified in the environmental assessment;
- Determine the effectiveness of mitigation measures in order to modify or implement new measures where required;
- Support the implementation of adaptive management measures to address previously unanticipated adverse environmental effects;
- Provide information on environmental effects and mitigation that can be used to improve and/or support future environmental assessments including cumulative environmental effects assessments; and
- Support environmental management systems used to manage the environmental effects of projects.

Adaptive management shall be inherent in the design and implementation of the EA follow-up and monitoring programs. Specific adaptive management elements shall be confirmed with the CNSC at each licensing step in the Project.

SITE SPECIFIC

After the EA follow-up program is finalized, it shall be submitted to the CNSC for review and acceptance. Following acceptance, OPG shall then be responsible for ensuring the elements as described in the final follow-up program are implemented.

The Environmental Monitoring and Environmental Assessment Follow-up Plan shall describe OPG's controls for verifying the accuracy of the environmental assessment and determining the effectiveness of any measures taken to mitigate adverse environmental effects.

Elements of the proposed EA follow-up are described in commitments D-P-12.1 through D-P-12.9 in the OPG Commitments Report, and as listed below.

#	Deliverables for Completion
D-P-12.1	Environmental Monitoring and Environmental Assessment Follow-up Plan
D-P-12.2	Methodology Reports for Environmental Monitoring and EA Follow-up for Atmospheric Environment.
D-P-12.3	Methodology Reports for Environmental Monitoring and EA Follow-up for Surface Water Environment.
D-P-12.4	Methodology Reports for Environmental Monitoring and EA Follow-up for Aquatic Environment.
D-P-12.5	Methodology Reports for Environmental Monitoring and EA Follow-up for Terrestrial Environment.
D-P-12.6	Methodology Reports for Environmental Monitoring and EA Follow-up for Geological and Hydrogeological Environment.
D-P-12.7	Methodology Reports for Environmental Monitoring and EA Follow-up for Land Use.
D-P-12.8	Methodology Reports for Environmental Monitoring and EA Follow-up for Traffic and Transportation.
D-P-12.9	Methodology Reports for Environmental Monitoring and EA Follow-up for Health – Non-Human Biota and Human Health.

Environmental Monitoring and Environmental Assessment Follow-up Plan and methodology reports for each affected environment component are to be completed per the Commitments Report. OPG will prepare and submit the Environmental Monitoring and Environmental Follow-Up Methodology Reports prior to the commencement of the related licensed activities.

The Environmental follow-up and monitoring program will be incorporated into site preparation phase environmental monitoring programs (as applicable to site preparation activities), to ensure these activities and mitigation measures conform with the outcome of the EA. OPG shall submit a document annually on their findings of their follow-up and monitoring program.

SITE SPECIFIC

Recommendations and Guidance:

Appendix A, section A.3.10 EA follow-up program, of CNSC REGDOC-2.9.1, *Environmental Protection: Environmental Policy, Assessments and Protection Measures*.

Section 12, EA follow-up program, of CNSC *Generic Guidelines for the Preparation of an Environmental Impact Statement pursuant to the Canadian Environmental Assessment Act*, 2012.

Section 6, Engagement Activities after an Environmental Assessment or Licensing Decision, of CNSC REGDOC-3.2.2: *Aboriginal Engagement*.

15.3 CNSC acceptance of documents required for site preparation

Licence Condition:

The licensee shall have the documents required for site preparation accepted by the Commission, or person authorized by the Commission, prior to the commencement of the licensed activities described in Part IV (i) of this licence.

Preamble:

The licensed activities are those described in Section IV of PRSL 18.00/2031. The activity licensed by the PRSL is "site preparation" of the OPG New Nuclear at Darlington site for up to four Class 1A nuclear power reactors with a maximum combined net electrical output of 4800 megawatt electric (MWe) to supply the Ontario grid. Site preparation involves activities necessary to facilitate the subsequent construction and operation of the new nuclear facility. The PRSL does not permit physical works directly related to construction of nuclear facility structures, systems, and components.

As indicated in Part IV (i)(g) of the PRSL, OPG is permitted to construct shoreline protection measures to protect the site from potential flooding and erosion. However, as documented in the Government Response to the Joint Review Panel Report, no bluff removal or lake infill can occur unless a reactor technology has been selected and there is certainty that the project will proceed. In addition, in-water works on the shoreline or in-land will require an authorization from Fisheries and Oceans Canada for activities causing harmful alteration, disruption, or destruction of fish habitat and for death of fish by means other than fishing pursuant to Section 35 and 32 of the *Fisheries Act*, respectively. OPG will also require approval from the Ontario Ministry of Natural Resources to purchase Crown Land under the *Public Lands Act* in the bed of Lake Ontario.

Bank Swallows are now listed as a threatened species under the *Species At Risk Act* (since 2014). As a result, their habitat is protected under 58 (1, c) of the Act. As such, OPG will have to act in accordance with the *Species At Risk Act* regarding the protection of bank swallows from Environment and Climate Change Canada.

The appropriate permits shall be obtained for all species identified as Species At Risk.
OPG application for a Licence to Prepare Site (LTPS) for the OPG DNNP Site was submitted in anticipation of the Province of Ontario selecting an EPC to prepare the site and construct the new nuclear facility. Once selected, OPG will enter into a contract with an EPC for provision of the nuclear facility and related works including preparation of the site. OPG may also elect to enter into a contract with an EPC for the provision of site preparation activities only, in advance of a decision from the Province of Ontario on the specific reactor technology that will be procured.

In chapter 2 of the originally submitted OPG LTPS application NK054-CORR-00531-00035, *Application for a Licence to Prepare Site for the Future Construction of OPG New Nuclear at Darlington*, OPG commits that "all implementing documents required for site preparation will be in place prior to the start of the licensed activities." These documents include a number of

procedures, plans and other documents to be developed at a later date by OPG and the selected EPC. This licence condition provides CNSC staff the opportunity to review and independently verify that the implementing documents necessary for site preparation are in place prior to the commencement of the licensed activities.

Compliance Verification Criteria:

The following documents referenced in the OPG application for renewal of LTPS and associated supporting documents will be reviewed by CNSC staff to determine suitability to support site preparation activities and be in place prior to the commencement of the activities:

Title	Document
Nuclear Management System	N-CHAR-AS-0002
Nuclear Management System Administration	N-PROG-AS-0001
Information Management	OPG-PROG-0001
Human Performance	N-PROG-AS-0002
Performance Improvement	N-PROG-RA-0003
Independent Assessment	N-PROG-RA-0010
Training	N-PROG-TR-0005
Items and Services Management	OPG-PROG-0009
Reactor Safety Program	N-PROG-MP-0014
Design Management	N-PROG-MP-0009
Environmental Health and Safety Managed Systems	OPG-PROG-0005
Consolidated Nuclear Emergency Plan	N-PROG-RA-0001
Conduct of Regulatory Affairs	N-PROG-RA-0002
Nuclear Security	N-PROG-RA-0011
Project Management	OPG-PROG-0039
Decommissioning Program	W-PROG-WM-0003
Cyber Security	OPG-PROG-0042
Business Planning	N-PROG-AS-0005

OPG shall submit the documentation for the following deliverables, as described in the OPG Commitments Report. CNSC staff expectations are that documents will be provided no later than 90 calendar days prior to the commencement of the licensed activities and that the documents required for site preparation are developed in accordance with the commitments made under the LTPS. CNSC staff will provide comments, as appropriate, in a timely fashion so as not to adversely affect the project schedule. Once CNSC staff has reviewed and accepted the documents, CNSC staff will provide written consent to OPG to authorize the commencement of the licensed activities.

SITE SPECIFIC

Deliverables ID	Deliverable and sub-Deliverables listed therein
D-P-1	DNNP Management System and Implementing Documents
D-P-2	Occupational Health and Safety Plan
D-P-3	Environmental Management and Protection Plans
D-P-4	EPC Quality Management Plan
D-P-5	Emergency Management and Fire Protection Plans
D-P-6	Personnel Training Plan
D-P-7	Site Security Plan
D-P-8	EPC Level 1 and Level 2 Project Management Schedule
D-P-9	Site Geotechnical and Seismic Hazard Investigation Program
D-P-10	EPC Traffic Management Plan
D-P-12	Environmental Monitoring and Environmental Assessment Follow-up
D-P-13	Preliminary Decommissioning Plan and Financial Guarantee
D-P-14	Fish Habitat Compensation Plan
D-P-15	Round Whitefish Action Plan
D-P-16	Lake Infill Design
D-P-17	Communications, Consultation and Stakeholder Relations Program/Plan
D-P-18	Proposed Layout of Structures in the Final Layout State (to the extent practicable)

Recommendations and Guidance:

None.

DEFINITIONS

Accept/ed/able/ance - meets regulatory requirements, which means it is in compliance with regulatory documents or technical standards referenced in the licence.

Compliance Verification Criteria - are measures of conformity to the regulatory requirements. CNSC staff use these criteria to confirm that the licensee is meeting the corresponding licence condition.

Consent - permission to proceed, given by CNSC delegated authority, for situations or changes where the licensee would:

- Comply with a regulatory requirement set out in applicable laws and regulations;
- Comply with a licence condition; and
- Not adversely impact the licensing basis.

Graduated Enforcement - a process for escalating enforcement action. If initial enforcement action does not result in timely compliance, gradually more severe enforcement actions may need to be used. It takes into account such things as:

- The risk significance of the non-compliance with respect to health, safety, security, the environment and international obligations;
- The circumstances that lead to the non-compliance (including acts of willfulness);
- Previous compliance record;
- Operational and legal constraints (for example, Directive on the Health of Canadians); and
- Industry specific strategies.

[CNSC process document, *Assure Compliance: Select and Apply Enforcement Tools*]

Licensee-produced licensing documents - documents containing the safety and control measures described in the licence application and the documents needed to support that licence application.

Licensing Basis - the Licensing Basis for a regulated facility or activity is a set of requirements and documents comprising:

(i) The regulatory requirements set out in the applicable laws and regulations;
(ii) The conditions and safety and control measures described in the facility's or activity's licence and the documents directly referenced in that licence; and
(iii) The safety and control measures described in the licence application and the documents needed to support that licence application.

Person authorized by the Commission - for the purpose of the PRSL and LCH, it means CNSC staff fulfilling the following positions:

- The Director, Advanced Reactor Licensing Division;
- The Director General, Directorate of Advanced Reactor Technologies; and
- The Executive Vice President and Chief Regulatory Operations Officer, Regulatory Operations Branch.

Program(s) - a documented group of planned activities, procedures, processes, standards and instructions coordinated to meet a specific purpose.

Programmatic failure - a programmatic failure (or programmatic non-compliance), arises under one or more of the following circumstances:

- Failure to establish a required program or program element;
- Failure of a program or program element to meet a mandated standard;
- Failure to comply with a specific, objective provision of a program; and
- Aggravated or systemic failure(s) to adhere to applicable procedures.

[Defined for the purpose of the LCH – *OPG governance Regulatory Interpretation* CNSC-024]

Safe Direction - means changes in safety levels which would **not** result in:

- A reduction in safety margins;
- A breakdown of barrier;
- An increase in risk;
- An increase in the risk of spills of hazardous substances;
- Injuries to workers or members of the public; and
- Introduction of a new hazard.

Shall - is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard.

[CSA standard N286-12, *Management system requirements for nuclear power plants*]

Written notification - a physical or electronic communication between a CNSC delegated authority and a person authorized to act on behalf of the licensee.

Written notification prior to implementation - CNSC must receive the written notification for the proposed changes within a reasonable time prior to the implementation. This will allow sufficient time for CNSC staff to review the submission and determine the acceptability.

ACRONYMS

The following is the list of acronyms used in this document:

AIA	Authorized Inspection Agency
ALARA	As Low As Reasonably Achievable
ASME	American Society of Mechanical Engineers
BDBA	Beyond Design Basis Accident
BPVC	Boiler and Pressure Vessel Code
CEAA	Canadian Environmental Assessment Agency
CMD	Commission Member Document
CNEP	Consolidated Nuclear Emergency Plan
CNSC	Canadian Nuclear Safety Commission
CSA	Canadian Standards Association
CVC	Compliance Verification Criteria
DG	Director General
DNGS	Darlington Nuclear Generating Station
DNNP	Darlington New Nuclear Project
DRIMPM	Directorate of Regulatory Improvement and Major Projects Management
DWMF	Darlington Waste Management Facility
ECCC	Environment and Climate Change Canada
EIS	Environmental Impact Statement
EMS	Environmental Management System
EPC	Engineering, Procurement and Construction Company
EQ	Equipment Qualification
EVP	Executive Vice President
GOC	Government of Canada
IAEA	International Atomic Energy Agency
JRP	Joint Review Panel
LC	Licence Condition
LCH	Licence Conditions Handbook
LTPS	Licence to Prepare Site
MASL	Meters Above Sea Level
NBCC	National Building Code of Canada
NCB	National Certification Board
NEW	Nuclear Energy Worker
NFCC	National Fire Code of Canada
NFPA	National Fire Protection Association
NMFLD	New Major Facilities Licensing Division
OHS	Occupational Health & Safety
OHSA	Occupational Health and Safety Act of Ontario
ONFA	Ontario Nuclear Funds Agreement

OPG	Ontario Power Generation Inc.
PAR	Public Attitude Research
PIDP	Public Information and Disclosure Program
PDP	Preliminary Decommissioning Plan
PRSL	Power Reactor Site Licence
RA	Responsible Authority
RSA	Regional Study Area
SCA	Safety and Control Area
SPA	Specific Area
SQ	Seismic Qualification
SSC	Structures, Systems and Components
WN	Written Notification

APPENDIX A – LISTS OF VERSION CONTROLLED DOCUMENTS

A.1 – All Canadian Nuclear Safety Commission (CNSC) documents referenced in the LCH

Document #	Document Title	Version	L.C.	e-Doc #
REGDOC-1.1.1	Site Evaluation and Site Preparation for New Reactor Facilities	2018	all	CNSC Website
REGDOC-3.2.1	Public Information and Disclosure	2018	G.6	CNSC Website
REGDOC-2.1.2	Safety Culture	2018	1.1	CNSC Website
REGDOC-2.2.2	Personnel Training	2016	1.1	CNSC Website
REGDOC-2.5.2	Design of Reactor Facilities: Nuclear Power Plants (for site preparation design management only; Sections 5.1 to 5.3 only)	2014	5.1	CNSC Website
REGDOC-2.9.1	Environmental Protection: Environmental Principles, Assessments and Protection Measures, Version 1.1	2017	9.1	CNSC Website
REGDOC-2.12.1	High Security Sites: Nuclear Response Force, Volume I, Version 2	2018	12.1	N/A
REGDOC-2.12.1	High-Security Facilities, Volume II: Criteria for Nuclear Security Systems and Devices	2018	12.1	N/A
REGDOC-2.12.2	Site Access Security Clearance	2013	12.1	CNSC Website
REGDOC-2.2.4	Fitness for Duty, Volume III: Nuclear Security Officer Medical, Physical, and Psychological Fitness	2018	12.1	CNSC Website
REGDOC-2.13.1	Safeguards and Nuclear Material Accountancy	2018	13.1	CNSC Website

A.2 – All Canadian Standards Association (CSA) and other Codes documents referenced in the LCH

Document #	Document Title	Version	L.C.
N286	Management system requirements for nuclear facilities	2012	1.1
N286.10	Configuration management for high energy reactor facilities	2016	1.1
N286.7	Quality assurance of analytical, scientific and design computer programs for nuclear power plants	1999 reaffirmed 2012	4.1
NBCC	National Building Code of Canada	2020	5.1
NFCC	National Fire Code of Canada	2020	5.1
N288.4	Environmental monitoring program at class I nuclear facilities and uranium mines and mills	2010	9.1 15.2
N288.5	Effluent monitoring programs at class I nuclear facilities and uranium mines and mills	2011	9.1
N288.6	Environmental risk assessments at class I nuclear facilities and uranium mines and mills	2012	9.1
N288.7	Groundwater protection programs at Class I nuclear facilities and uranium mines and mills	2015	9.1
N288.8	Establishing and implementing action levels for releases to the environment from nuclear facilities	2017	9.1
N294	Decommissioning of facilities containing nuclear substances	2009	11.2
N290.7	Cyber security for nuclear power plants and small reactor facilities	2014	12.1

APPENDIX B – LIST OF LICENSEE DOCUMENTS REQUIRING WRITTEN NOTIFICATION

Document #	Document Title	Notification Requirements	L.C.
GENERAL			
OPG-PROG-0001	Information Management	When implemented	G.2 1.1
NK054-DRAW-01210-00007	OPG New Nuclear at Darlington Survey Drawing	PRIOR to implementation	G.3
NK054-REP-01210-00003	Exclusion Zone Determination for Darlington New Nuclear Project	PRIOR to implementation	G.3
NK054-REP-00531-10003	Documentary Information Summary: DNNP Site Preparation Financial Guarantee	PRIOR to implementation	G.5
N-STD-AS-0013	Nuclear Public Information Disclosure	When implemented	G.6
MANAGEMENT SYSTEM			
N-CHAR-AS-0002	Nuclear Management System	PRIOR to implementation	1.1
N-PROG-AS-0001	Nuclear Management System Administration	When implemented	1.1
N-STD-AS-0020	Nuclear Management Systems Organization	When implemented	1.1
OPG-PROG-0001	Information Management	When implemented	1.1 G.2
N-PROG-AS-0002	Human Performance	When implemented	1.1
N-PROG-RA-0003	Performance Improvement	When implemented	1.1 3.2
N-PROG-RA-0010	Independent Assessment	When implemented	1.1
N-PROG-TR-0005	Training	When implemented	1.1
OPG-PROG-0009	Items and Services Management	When implemented	1.1
OPG-PROG-0039	Project Management	When implemented	1.1

Document #	Document Title	Notification Requirements	L.C.
N-PROG-MP-0009	Design Management	When implemented	1.1 5.1
N-POL-0001	Nuclear Safety Policy	When implemented	1.1
HUMAN PERFORMANCE MANAGEMENT			
OPERATING PERFORMANCE			
N-PROG-RA-0002	Conduct of Regulatory Affairs	When implemented	3.2
N-PROG-RA-0003	Performance Improvement	When implemented	1.1 3.2
N-PROC-RA-0005	Written Reporting to Regulatory Agencies	When implemented	3.2
N-PROC-RA-0020	Preliminary Event Notifications	When implemented	3.2
SAFETY ANALYSIS			
N-PROG-MP-0014	Reactor Safety Program	When implemented	4.1
PHYSICAL DESIGN			
N-STD-MP-0028	Conduct of Engineering	When implemented	5.1
N-PROG-MP-0009	Design Management	When implemented	5.1 5.2
FITNESS FOR SERVICE			
RADIATION PROTECTION			
NK054-PLAN-01210-00034	Darlington New Nuclear Project – Health and Safety Plan	When implemented	7.1
CONVENTIONAL HEALTH AND SAFETY			
OPG-POL-0001	Health and Safety Policy	When implemented	8.1
OPG-PROC-0132	Respiratory Protection	When implemented	8.1
NK054-PLAN-01210-00034	Darlington New Nuclear Project – Health and Safety Plan	When implemented	8.1
ENVIRONMENTAL PROTECTION			

Document #	Document Title	Notification Requirements	L.C.
OPG-POL-0021	Environmental Policy	When implemented	9.1
OPG-PROG-0005	Environment Health And Safety Managed Systems	When implemented	1.1 8.1 9.1 11.1
N-PROC-OP-0025	Management of the Environmental Monitoring Programs	When implemented	9.1
OPG-PROC-0126	Hazardous Material Management	When implemented	9.1
N-STD-OP-0031	Monitoring of Nuclear and Hazardous Substances in Effluents	When implemented	9.1
N-PROC-OP-0044	Contaminated Lands and Groundwater Monitoring Management	When implemented	9.1
N-PROC-OP-0037	Environmental Approvals	When implemented	9.1
NK054-PLAN-07730-00014	Environmental Monitoring and Environmental Assessment Follow-Up for the Darlington New Nuclear project	When implemented	9.1
EMERGENCY MANAGEMENT AND FIRE PROTECTION			
N-PROG-RA-0001	Consolidated Nuclear Emergency Plan	PRIOR to implementation	10.1
WASTE MANAGEMENT			
OPG-PROG-0005	Environment Health And Safety Managed Systems	When implemented	11.1 9.1
W-PROG-WM-0003	Decommissioning Program	PRIOR to implementation	11.2
NK054-PLAN-00960-00001	Preliminary Decommissioning Plan OPG New Nuclear at Darlington Site – Site Preparation	PRIOR to implementation	11.2
SECURITY			

Document #	Document Title	Notification Requirements	L.C.
8300-REP-61400-10003	Darlington Nuclear Generating Station Security Report	PRIOR to implementation	12.1
N-PROG-RA-0011	Nuclear Security	PRIOR to implementation	12.1
OPG-PROG-0042	Cyber Security	When implemented	12.1
N-PROC-RA-0135	Cyber Security	When implemented	12.1
SAFEGUARDS			
N-PROG-RA-0015	Nuclear Safeguards	PRIOR to implementation	13.1
PACKAGING AND TRANSPORT			
SITE SPECIFIC			
NK054-REP-01210-00078	Darlington New Nuclear Project Commitments Report	PRIOR to implementation	15.1

**Should a document listed as a WN document within this LCH also require submission for approval/acceptance per a standard referenced in the associated Power Reactor Site Preparation Licence (PRSL), the licensee shall submit that document for approval/acceptance to comply with the governing standard and the associated LC.*

APPENDIX C – GOVERNMENT OF CANADA RESPONSE TO JOINT REVIEW PANEL REPORT RECOMMENDATIONS

Addressed to Ontario Power Generation Commitments through Responsible Authorities and Federal Authorities

PRIOR TO SITE PREPARATION

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
2	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission require OPG to conduct a comprehensive soils characterization program. In particular, the potentially impacted soils in the areas OPG identifies as the spoils disposal area, cement plant area and asphalt storage area must be sampled to identify the nature and extent of potential contamination.	The Government of Canada accepts the recommendation to require OPG to conduct a comprehensive soils characterization program. The Government of Canada also notes that the recommended soils characterization program could also support future ecological risk assessment activities by OPG. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	Soil Quality, D-P-3.6
6	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission require OPG to update its preliminary decommissioning plan for site preparation in accordance with the requirements of Canadian Standards Association (CSA) Standard N294-09. The OPG preliminary decommissioning plan for site preparation must incorporate the rehabilitation of the site to reflect the existing biodiversity in the event that the Project does not proceed beyond the site preparation phase.	The Government of Canada accepts the intent of the recommendation to require OPG to maintain a preliminary decommissioning plan for site preparation in accordance with the requirements of CSA Standard N294-09, which provides direction on the decommissioning of licensed facilities and activities consistent with Canadian and international recommendations. The Government of Canada accepts the recommendation to require OPG to revise the preliminary decommissioning plan once a reactor technology is selected.	Preliminary Decommissioning Plan, D-P-13.1

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	OPG shall prepare a detailed preliminary decommissioning plan once a reactor technology is chosen, to be updated as required by the Canadian Nuclear Safety Commission.		
7	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission require that OPG establish a decommissioning financial guarantee to be reviewed as required by the Canadian Nuclear Safety Commission. Regarding the decommissioning financial guarantee for the site preparation stage, the Panel recommends that this financial guarantee contain sufficient funds for the rehabilitation of the site in the event the Project does not proceed beyond the site preparation stage.	The Government of Canada accepts the intent of this recommendation to require OPG to establish a financial guarantee for the site preparation stage, however, notes that the financial guarantee must be sufficient to cover the cost of decommissioning work outlined in the preliminary decommissioning plan referenced in Recommendation #6.	Financial Guarantee, D-P-13.2
8	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission require OPG to develop a follow-up and adaptive management program for air contaminants such as Acrolein, NO_2, SO_2, SPM, PM2.5 and PM10, to the satisfaction of the Canadian Nuclear Safety Commission, Health Canada and Environment Canada. Additionally, the Canadian Nuclear Safety Commission must require OPG to develop an action plan acceptable to Health Canada for days when there are air quality or smog alerts.	The Government of Canada accepts this recommendation to require OPG to develop a follow-up and adaptive management program for air contaminants and a smog alert action plan. Health Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, to assist in the implementation of this recommendation.	Air Quality, D-P-3.10, D-P-12.2
9	The Panel recommends that the Canadian Nuclear Safety Commission, in collaboration with Health Canada, require OPG to develop and implement a detailed acoustic assessment for all scenarios evaluated. The predictions must be shared with potentially affected members of the public. The	The Government of Canada accepts this recommendation to require OPG to develop and implement a detailed acoustic assessment. Health Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety	Noise, D-P-3.2

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	OPG Nuisance Effects Management Plan must include noise monitoring, a noise complaint response mechanism and best practices for activities that may occur outside of municipal noise curfew hours to reduce annoyance that the public may experience.	Commission, to assist in the implementation of this recommendation.	
12	The Panel recommends that before in-water works are initiated, the Canadian Nuclear Safety Commission require OPG to collect water and sediment quality data for any future embayment area that may be formed as a consequence of shoreline modifications in the vicinity of the outlet of Darlington Creek. This data should serve as the reference information for the proponent's post-construction commitment to conduct water and sediment quality monitoring of the embayment area.	The Government of Canada accepts this recommendation to require OPG to collect water and sediment quality data for any future embayment area. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The Government of Canada notes that authorization under the *Fisheries Act* will be required prior to in-water works. Prior to the issuance of an authorization, Fisheries and Oceans Canada will require a water and sediment quality monitoring program. This program is required to assess whether OPG continues to meet the intent of section 36 of the *Fisheries Act*.	Water and Sediment Quality, D-P-12.3
13	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to collect and assess water quality data for a comprehensive number of shoreline and offshore locations in the site study area prior to commencing in-water works. This data should be used to establish a reference for follow-up monitoring.	The Government of Canada accepts the intent of this recommendation to require OPG to collect and assess water quality data for a comprehensive number of shoreline and offshore locations in the site study area prior to commencing in-water works, and would further support the collection of sediment quality data as part of a comprehensive program. Environment Canada and Fisheries and Oceans Canada can provide available scientific and	Water Quality, D-P-12.3

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
		technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The Government of Canada notes that authorization under the *Fisheries Act* will be required prior to in-water works. Prior to the issuance of an authorization, Fisheries and Oceans Canada will require a water and sediment quality monitoring program. This program is required to assess whether OPG continues to meet the intent of section 36 of the *Fisheries Act*.	
16	The Panel recommends that prior to the start of construction, the Canadian Nuclear Safety Commission require the proponent to establish toxicity testing criteria and provide the test methodology and test frequency that will be used to confirm that stormwater discharges from the new nuclear site comply with requirements in the *Fisheries Act*.	The Government of Canada accepts the intent of this recommendation to require the proponent to establish toxicity testing criteria and provide the test methodology and test frequency for stormwater. The Government of Canada would additionally support the application of this recommended testing for process effluents. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	Stormwater Discharges, D-P-3.4, D-C-3.1
20	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to perform a thorough evaluation of site layout opportunities before site preparation activities begin, in order to minimize the overall effects on the terrestrial and aquatic environments and maximize the opportunity for quality terrestrial habitat rehabilitation.	The Government of Canada accepts this recommendation to require OPG to perform a thorough evaluation of site layout opportunities before site preparation activities begin, as recommended. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	Site Layout, D-P-3.7, D-P-14.1

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
		As part of the conditions of authorization under the *Fisheries Act*, Fisheries and Oceans Canada also commits to working with OPG to ensure overall impacts to aquatic habitat are minimized with appropriate mitigation and habitat compensation.	
22	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to develop a follow-up program for insects, amphibians and reptiles, and mammal species and communities to ensure that proposed mitigation measures are effective.	The Government of Canada accepts the intent of this recommendation to require OPG to develop a follow-up program for insects, amphibians and reptiles, and mammal species and communities as appropriate, and would support a focus for this follow-up program on species at risk and the use of this follow-up program to verify the conclusions of the Ecological Risk Assessment. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	Insects, amphibians, reptiles, and mammals, D-P-12.5
25	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to conduct more sampling to confirm the presence of Least Bittern before site preparation activities begin. The Panel recommends that the Canadian Nuclear Safety Commission require OPG to develop and implement a management plan for the species at risk that are known to occur on site. The plan should consider the resilience of some of the species and the possibility of off-site compensation.	The Government of Canada accepts this recommendation to require OPG to conduct more sampling to confirm the presence of Least Bittern and to develop and implement a management plan for species at risk, as may be appropriate. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	Least Bittern, D-P-3.7, D-P-12.5
47	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission ensure	The Government of Canada accepts this recommendation to require that OPG's Traffic Management Plan consider elements related to	Traffic Management, D-P-10.1

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	the OPG Traffic Management Plan addresses the following: • Contingency plans to address the possibility that the assumed road improvements do not occur; • Consideration of the effect of truck traffic associated with excavated material disposal on traffic operations and safety; • Further analysis of queuing potential onto Highway 401; and, • Consideration of a wider range of mitigation measures, such as transportation-demand management, transit service provisions and geometric improvements at the Highway 401/Waverley Road interchange.	contingency plans, truck traffic, queuing potential on Highway 401 and additional mitigation measures.	

DURING SITE PREPARATION

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
5	To avoid any unnecessary environmental damage to the bluff at Raby Head and fish habitat, the Panel recommends that no bluff removal or lake infill occur during the site preparation stage, unless a reactor technology has been selected and there is certainty that the Project will proceed.	The Government of Canada accepts this recommendation to avoid any unnecessary environmental damage to the bluff at Raby Head and fish habitat as recommended. Fisheries and Oceans Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The Government of Canada further notes that authorization under the *Fisheries Act* will be	Bluff Removal and Lake Infill, D-P-3.8, D-P-14.1, D-P-16.1

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
		required prior to any lake infill taking place, and confirms that Fisheries and Oceans Canada will work with OPG to ensure that as a condition of that authorization, that no lake infill occurs unless there is certainty that the Project will proceed and appropriate mitigation measures and habitat compensation have been implemented.	
10	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to undertake a detailed site geotechnical investigation prior to commencing site preparation activities. The geologic elements of this investigation should include, but not be limited to: • Collection of site-wide information on soil physical properties; • Determining the mechanical and dynamic properties of overburden material across the site; • Mapping of geological structures to improve the understanding of the site geological structure model; • Confirming the lack of karstic features in the local bedrock at the site; and, • Confirming the conclusions reached concerning the liquefaction potential in underlying granular materials.	The Government of Canada accepts the intent of this recommendation to require OPG to undertake a detailed site geotechnical investigation, however, notes that this investigation may be performed concurrently with site preparation activities. Natural Resources Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	Geotechnical, D-P-9.1
19	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to expand the scope of the groundwater monitoring program to monitor transitions in groundwater flows that may	The Government of Canada accepts this recommendation to require OPG to expand the scope of the groundwater monitoring program to monitor transitions in groundwater flows that may arise as a	Groundwater, D-P-12.6

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	arise as a consequence of grade changes during the site preparation and construction phases of the Project. The design of the grade changes should guide the determination of the required monitoring locations, frequency of monitoring and the required duration of the program for the period of transition to stable conditions following the completion of construction and the initial period of operation.	consequence of grade changes during the site preparation and construction phases of the Project. Natural Resources Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	
21	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to compensate for the loss of ponds, like-for-like, preferably in the site study area. The Panel also recommends that the Canadian Nuclear Safety Commission require OPG to use best management practices to prevent or minimize the potential runoff of sediment and other contaminants into wildlife habitat associated with Coot's Pond during site preparation and construction phases.	The Government of Canada accepts the recommendation to require OPG to use best management practices to prevent or minimize the potential runoff of sediment and other contaminants. The Government of Canada accepts the intent of compensating for the loss of ponds, but would also support the Canadian Nuclear Safety Commission requiring OPG to design compensation ponds that maximize ecological function, and not necessarily limited to "like-for-like". Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	Loss of Ponds, D-P-3.7
24	The Panel recommends that during the site preparation stage, Environment Canada shall ensure that OPG not undertake habitat destruction or disruption between the period of May 1 and July 31 of any year to minimize effects to breeding migratory birds.	The Government of Canada accepts the intent of this recommendation to avoid habitat destruction or disruption between the period of May 1 and July 31 of any year to protect most bird species' nesting activities. However, Environment Canada does not have the ability to ensure that OPG conducts all of its land clearing activities when migratory bird nests are not active since the department does not have a regulatory permitting ability to bind the proponent.	Birds, D-P-3.7

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
		The Government of Canada acknowledges that the Canadian Nuclear Safety Commission has the statutory authority and powers to address this recommendation through future licensing under the *Nuclear Safety and Control Act*. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	
27	The Panel recommends that prior to any destruction of the Bank Swallow habitat, the Canadian Nuclear Safety Commission require OPG to implement all of its proposed Bank Swallow mitigation options, including: • The acquisition of off-site nesting habitat; • The construction of artificial Bank Swallow nest habitat with the capacity to maintain a population which is at least equal to the number of breeding pairs currently supported by the bluff and as close to the original bluff site as possible; and • The implementation of an adaptive management approach in the Bank Swallow mitigation plan, with the inclusion of a threshold of loss to be established in consultation with all stakeholders before any habitat destruction takes place.	The Government of Canada accepts the intent of this recommendation to require OPG to implement the identified Bank Swallow mitigation measures using an adaptive management approach, and would support determining required mitigation based on reasonable estimates of actual burrow loss. The Government of Canada expects that the acquisition of offsite nesting habitat should only be necessary if follow-up monitoring shows that onsite mitigation is unsuccessful, and notes that onsite mitigation may also include the enhancement of potential natural nesting sites within the Site Study Area. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	Bank Swallows, D-P-3.8
30	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to the construction of in-	The Government of Canada accepts this recommendation. Fisheries and Oceans Canada will work with the Canadian Nuclear Safety	Impingement and entrainment sampling, Once through cooling,

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	water structures, Fisheries and Oceans Canada require OPG to conduct: • Additional impingement sampling at the existing Darlington Nuclear Generating Station to verify the 2007 results and deal with inter-year fish abundance variability and sample design inadequacies; and, • Additional entrainment sampling at the existing Darlington Nuclear Generating Station to better establish the current conditions. The program should be designed to guard against a detection limit bias by including in the analysis of entrainment losses those fish species whose larvae and eggs are captured in larval tow surveys for the seasonal period of the year in which they occur. A statistical optimization analysis will be needed to determine if there is a cost-effective entrainment survey design for round whitefish larvae.	Commission, and the Ontario Ministry of Natural Resources to develop an impingement and entrainment sampling program. The Government of Canada would also like to note that authorization under the *Fisheries Act* will be required prior to any lake infill taking place and commits that Fisheries and Oceans Canada will work with OPG to ensure that the impingement and entrainment sampling program is developed and implemented as a condition of that authorization.	D-P-12.4, D-P-15.1, D-C-1.2
31	Irrespective of the condenser cooling system chosen for the Project, the Panel recommends that Fisheries and Oceans Canada not permit OPG to infill beyond the two-metre depth contour in Lake Ontario.	The Government of Canada accepts the intent of this recommendation. Fisheries and Oceans Canada will work with OPG to ensure that the HADD of fish habitat associated with the proposed lake infill is limited to the area within the two-metre depth contour of Lake Ontario. The extent of the HADD as well as appropriate mitigation and habitat compensation will be included in the conditions of authorization under the *Fisheries Act*.	Lake Infill, D-P-14.1, D-P-16.1, D-C-1
38	The Panel recommends that the Canadian Nuclear Safety Commission require that the geotechnical and	The Government of Canada accepts the intent of this recommendation to require OPG's detailed site	Geotechnical. D-P-9.1, D-P-9.4

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	OPG Deliverable

	seismic hazard elements of the detailed site geotechnical investigation to be performed by OPG include, but not be limited to:
	• Prior to site preparation:
	  ○ demonstration that there are no undesirable subsurface conditions at the Project site. The overall site liquefaction potential shall be assessed with the site investigation data; and
	  ○ confirmation of the absence of paleo seismologic features at the site and, if present, further assessment to reduce the overall uncertainty in the seismic hazard assessment during the design of the Project must be conducted.
	• During site preparation and/or prior to construction:
	  ○ verification and confirmation of the absence of surface faulting in the overburden and bedrock at the site.
	• Prior to construction:
	  ○ verification of the stability of the cut slopes and dyke slopes under both static and dynamic loads with site/Project-specific data during the design of the cut slopes and dykes or before their construction;
	  ○ assessment of potential liquefaction of the northeast waste stockpile by using the data obtained from the pile itself upon completion of site preparation;
		investigation to include the noted geotechnical and seismic hazard elements, however, notes that this investigation may be performed concurrently with site preparation activities. Natural Resources Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	○ measurement of the shear strength of the overburden materials and the dynamic properties of both overburden and sedimentary rocks to confirm the site conditions and to perform soil-structure interaction analysis if necessary; ○ assessment of the potential settlement in the quaternary deposits due to the groundwater drawdown caused by future St. Marys Cement quarry activities; and ○ assessment of the effect of the potential settlement on buried infrastructures in the deposits during the design of these infrastructures. • Prior to operation: ○ development and implementation of a monitoring program for the Phase 4 St. Marys Cement blasting operations to confirm that the maximum peak ground velocity at the boundary between the Darlington and St. Marys Cement properties is below the proposed limit of three millimetres per second (mm/s).		
41	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission coordinate discussions with OPG and key stakeholders on the effects of the Project on housing supply and demand, community recreational facilities and programs, services and infrastructure as well as additional	The Government of Canada accepts the intent of this recommendation for the CNSC to initiate discussions with OPG and key stakeholders, however, notes that these discussions may occur concurrently with site preparation activities.	Socio-economic Impacts, D-P-17.1

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	measures to help deal with the pressures on these community assets.		

PRIOR TO CONSTRUCTION

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
3	The Panel recommends that the Canadian Nuclear Safety Commission require that as part of the Application for a Licence to Construct a reactor, OPG must undertake a formal quantitative cost-benefit analysis for cooling tower and once-through condenser cooling water systems, applying the principle of best available technology economically achievable. This analysis must take into account the fact that lake infill should not go beyond the two-metre depth contour and should include cooling tower plume abatement technology.	The Government of Canada accepts the intent of this recommendation to require OPG to conduct a formal quantitative cost-benefit analysis for cooling tower and once-through condenser cooling water systems, as recommended, but acknowledges that this analysis may be required earlier than indicated in the recommendation given the relationship between site layout and the choice of condenser cooling technology. Fisheries and Oceans Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The Government of Canada further acknowledges the connection of this Recommendation with Panel Recommendation #31 and as such notes that Fisheries and Oceans Canada will work with OPG to ensure through its regulatory process and conditions of authorization under the *Fisheries Act* that any Harmful Alteration, Disruption and Destruction (HADD) is limited to the 2 metre depth contour of Lake Ontario.	Cooling Options BATEA, D-C-1.1

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
14	The Panel recommends that following the selection of a reactor technology for the Project, the Canadian Nuclear Safety Commission require OPG to conduct a detailed assessment of predicted effluent releases from the Project. The assessment should include but not be limited to effluent quantity, concentration, points of release and a description of effluent treatment, including demonstration that the chosen option has been designed to achieve best available treatment technology and techniques economically achievable. The Canadian Nuclear Safety Commission shall also require OPG to conduct a risk assessment on the proposed residual releases to determine whether additional mitigation measures may be necessary.	The Government of Canada accepts this recommendation to require OPG to conduct a detailed assessment of predicted effluent releases from the Project, as recommended. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	Effluent Releases, D-P-12.9, D-C-2.1, D-C-4.1
17	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to provide an assessment of the ingress and transport of contaminants in groundwater on site during successive phases of the Project as part of the Application for a Licence to Construct. This assessment shall include consideration of the impact of wet and dry deposition of all contaminants of potential concern and gaseous emissions on groundwater quality. OPG shall conduct enhanced groundwater and contaminant transport modeling for the assessment and expand the modeling to cover the effects of future dewatering and expansion activities at the St. Marys Cement quarry on the Project	The Government of Canada accepts this recommendation to require OPG to provide an assessment of the ingress and transport of contaminants in groundwater on site during successive phases of the Project as recommended. For clarity, the Government of Canada would support enhanced groundwater and contaminant transport modeling extending to appropriate model boundaries, which may not necessarily be site boundaries. Natural Resources Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	Groundwater, D-P-12.6, D-C-2.1, D-C-4.1, D-C-5.1, D-C-5.2, D-C-6.1

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
26	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to develop a comprehensive assessment of hazardous substance releases and the required management practices for hazardous chemicals on site, in accordance with the *Canadian Environmental Protection Act*, once a reactor technology has been chosen.	The Government of Canada accepts this recommendation to require OPG to develop a comprehensive assessment of hazardous substance releases and the required management practices for hazardous chemicals on site once a reactor technology has been chosen. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	Hazardous Substances, D-P-3.6, D-P-12.9, D-C-2.1, D-C-5.2
32	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that Fisheries and Oceans Canada require OPG to mitigate the risk of adverse effects from operation, including impingement, entrainment and thermal excursions and plumes, by locating the system intake and diffuser structures in water beyond the nearshore habitat zone. Furthermore, OPG must evaluate other mitigative technologies for the system intake, such as live fish return systems and acoustic deterrents.	The Government of Canada accepts this recommendation. Fisheries and Oceans Canada will work with Environment Canada and the Canadian Nuclear Safety Commission to determine the appropriate location for the intake and diffuser structures, and to evaluate other mitigation options for both the intake and the diffuser structures, in order to mitigate adverse effects. Fisheries and Oceans Canada will work with OPG to ensure implementation through its regulatory process and conditions of authorization under the *Fisheries Act*.	Once-through Cooling, D-C-1.2
34	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to construction, Environment Canada ensure that enhanced resolution thermal plume modeling is conducted by OPG, taking into account possible future climate change effects. Fisheries and Oceans Canada shall ensure that the results of the modeling are incorporated into the design of the outfall diffuser and the evaluation of alternative locations for the placement of the intake	The Government of Canada accepts the intent of this recommendation. Environment Canada is committed to reviewing the information provided by OPG, and will rely on Fisheries and Oceans Canada authorization for a HADD associated with the intake or outfall to ensure that OPG undertakes this modelling. Fisheries and Oceans Canada will work with Environment Canada, and the Canadian Nuclear Safety Commission to incorporate the results from	D-C-1.2

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	and the diffuser of the proposed condenser cooling water system.	the thermal plume modeling into the determination of the appropriate location for the intake and diffuser structures to mitigate adverse effects. Fisheries and Oceans Canada will ensure implementation through conditions of a *Fisheries Act* authorization.	
35	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to operation, the Canadian Nuclear Safety Commission require OPG to include the following in the surface water risk assessment: • The surface combined thermal and contaminant plume; and, • The physical displacement effect of altered lake currents as a hazardous pulse exposure to fish species whose larvae passively drift through the area, such as lake herring, lake whitefish, emerald shiner and yellow perch. If the risk assessment result predicts a potential hazard then the Canadian Nuclear Safety Commission shall convene a follow-up monitoring scoping workshop with Environment Canada, Fisheries and Oceans Canada and any other relevant authorities to develop an action plan.	The Government of Canada accepts this recommendation to require OPG to update a comprehensive surface water risk assessment as recommended, however would clarify that an assessment of the combined thermal and contaminant plume should consider not only the surface area of the plume, but its vertical extent as well. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the design of the surface water risk assessment and any subsequent action plan development.	Once-through Cooling, D-P-12.3, D-P-12.4. D-C-1.2
37	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to determine the total area of permanent aquatic effects	The Government of Canada accepts the intent of this recommendation to require OPG to determine the total area of permanent aquatic effects from identified impacts. The Government of Canada would further support inclusion of cumulative effects assessment in this assessment, including the	Once-through Cooling, D-C-1.2, D-P-12.4

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	from the following, to properly scale mitigation and scope follow-up monitoring: • The thermal plume + 2°C above ambient temperature; • The mixing zone and surface plume contaminants; • Physical displacements from altered lake currents; and, • Infill and construction losses and modifications.	effects of impingement and entrainment and climate change. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. Further, Fisheries and Oceans Canada is committed to working with the Canadian Nuclear Safety Commission and OPG to ensure that any permanent aquatic habitat effects are mitigated and appropriate habitat compensation is developed and implemented as a condition of any *Fisheries Act* authorization.	
39	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to prepare a contingency plan for the construction, operation and decommissioning Project stages to account for uncertainties associated with flooding and other extreme weather hazards. OPG shall conduct localized climate change modeling to confirm its conclusion of a low impact of climate change. A margin/bound of changes to key parameters, such as intensity of extreme weather events, needs to be established to the satisfaction of the Canadian Nuclear Safety Commission. These parameters can be incorporated into hydrological designs leading up to an application to construct a reactor, as well as measures for flood protection. OPG must also conduct a drought analysis and incorporate any additional required mitigation/design modifications, to the satisfaction	The Government of Canada accepts this recommendation to require OPG to prepare a contingency plan to account for uncertainties associated with flooding, drought and other extreme weather hazards, as recommended. The Government of Canada accepts the intent of the recommendation to conduct localized climate change modeling; however, if OPG uses reputable published studies to evaluate the anticipated impact of climate change for the Project area, localized climate change modeling may not be necessary. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	Extreme Weather-Climate Change, D-C-7.1

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	of the Canadian Nuclear Safety Commission, as part of a Licence to Construct a reactor.		
40	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to: • Establish an adaptive management program for algal hazard to the Project cooling water system intake that includes the setup of thresholds for further actions; and, • Factor the algal hazard assessment into a more detailed biological evaluation of moving the intake and diffuser deeper offshore as part of the detailed siting studies and the cost-benefit analysis of the cooling system.	The Government of Canada accepts this recommendation to require OPG to establish an adaptive management program for algal hazards to the cooling water system intake, and factor that assessment into planned siting studies and cost-benefit analyses. Fisheries and Oceans Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	Algal Hazard, D-P-12.4, D-C-1.2
49	The Panel recommends that prior to construction, Transport Canada ensure that OPG undertake additional quantitative analysis, including collision frequencies and rail crossing exposure indices, and monitor the potential effects and need for mitigation associated with the Project.	The Government of Canada accepts the intent of this recommendation to require OPG to undertake additional rail safety studies, monitor the potential effects and determine the need for mitigation. The *Railway Safety Act* (RSA) places crossing safety responsibilities on the Railways and the Road Authorities. This policy reflects the objectives of Section 3 of the RSA. Ultimately, the Railway and the Road Authority must take the responsibility of performing the crossing assessment. Transport Canada is committed to provide assistance and expertise to the interested parties if required during the risk assessment and in the evaluation of any proposed mitigation measures.	Rail Safety, D-C-3.1

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
50	The Panel recommends that prior to construction, Transport Canada require OPG to conduct a risk assessment, jointly with Canadian National Railway, that includes: • An assessment of the risks associated with a derailment or other rail incident that could affect the Project; • An analysis of the risks associated with a security threat, such as a bomb being placed on a train running on the tracks that bisect the Project; • A comparative evaluation of the effectiveness of various mitigation measures or combination of measures (e.g., blast wall, retaining wall, recessed tracks, berm and railway speed restrictions within the vicinity of the site); • A determination of the design criteria necessary to ensure the effectiveness of these measures (e.g., the appropriate height, strength, material and design of a blast wall); and, • a critical analysis to confirm that these measures, when properly designed and implemented, would be sufficient to provide protection to the Project site in the event of a derailment at full speed or other adverse event.	The Government of Canada recognizes that the CNSC has the statutory authority and powers to address this recommendation through future regulatory activities under the *Nuclear Safety and Control Act*. Transport Canada is committed to provide assistance and expertise to the Canadian Nuclear Safety Commission and other parties if required during the risk assessment and in the evaluation of any proposed mitigation measures.	Rail Safety, D-C-3.1
51	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to construction, Transport Canada work with OPG to develop a follow-up	The Government of Canada accepts the intent of this recommendation. Transport Canada will provide guidance and support to OPG to assist in their development of a follow-up program to	Once-through Cooling, D-P-12.8

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	program to verify the accuracy of the prediction of no significant adverse effects to boating safety from the establishment of an increased prohibitive zone. OPG must also develop an adaptive management program, if required, to mitigate potential effects to small watercraft.	confirm that boating safety will not be significantly adversely affected. If an adaptive management program is required, Transport Canada can provide support and expertise to OPG in its development.	
52	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to make provisions for on-site storage of all used fuel for the duration of the Project, in the event that a suitable off-site solution for the long-term management for used fuel waste is not found.	The Government of Canada accepts the intent of this recommendation to the extent that it is the responsibility of waste owners for managing and funding the safe and secure operation of their own wastes. Canada's *1996 Radioactive Waste Policy Framework* states that the owners of radioactive waste are responsible for developing and implementing solutions, including all costs associated with safely and securely managing their wastes.	Used Fuel, D-C-9.1
53	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to make provisions for on-site storage of all of low and intermediate-level radioactive waste for the duration of the Project, in the event that a suitable off-site solution for the long-term management for this waste is not approved.	The Government of Canada accepts the intent of this recommendation to the extent that it is the responsibility of waste owners for managing and funding the safe and secure operation of their own wastes, in accordance with CNSC's regulatory requirements. Canada's 1996 *Radioactive Waste Policy Framework* states that the owners of radioactive waste are responsible for developing and implementing solutions, including all costs associated with safely and securely managing their wastes.	Low and intermediate-level radioactive Waste, D-C-9.1
57	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to undertake an assessment of the off-site effects of a severe accident. The assessment should	The Government of Canada accepts this recommendation to require OPG to undertake an assessment of the off-site effects of a severe accident. Environment Canada can provide	Malfunctions &Accidents, D-C-3.1

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	determine if the off-site health and environmental effects considered in this environmental assessment bound the effects that could arise in the case of the selected reactor technology.	available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	
58	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission confirm that dose acceptance criteria specified in RD-337 at the reactor site boundary – in the cases of design basis accidents for the Project's selected reactor technology – will be met.	The Government of Canada accepts this recommendation to ask the Canadian Nuclear Safety Commission to confirm that dose acceptance criteria specified in RD-337 will be met.	Malfunctions &Accidents, D-C-3.1
63	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to evaluate the cumulative effect of a common-cause severe accident involving all of the nuclear reactors in the site study area to determine if further emergency planning measures are required.	The Government of Canada accepts the intent of this recommendation to require OPG to evaluate the cumulative effect of a common-cause severe accident in the site study area. The Government of Canada notes that the CNSC has established a task force to examine the lessons learned from the Japan Earthquake and will evaluate the operational, technical and regulatory implications of the nuclear event in Japan in relation to Canadian nuclear power plants.	Malfunctions &Accidents, D-C-3.1

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

DURING CONSTRUCTION

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
18	The Panel recommends that based on the groundwater and contaminant transport modeling results, the Canadian Nuclear Safety Commission require OPG to expand the Radiological Environmental Monitoring Program. This program shall include relevant residential and private groundwater well quality data in the local study area that are not captured by the current program, especially where the modeling results identify potential critical groups based on current or future potential use of groundwater.	The Government of Canada accepts this recommendation to require OPG to update the Radiological Environmental Monitoring Program, based on the groundwater and contaminant transport modeling results. Natural Resources Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	Radiological Environmental Monitoring Program (REMP), D-C-6.1
54	The Panel recommends that during operation, the Canadian Nuclear Safety Commission require OPG to implement measures to manage releases from the Project to avoid tritium in drinking water levels exceeding a running annual average of 20 Bq/L at drinking water supply plants in the regional study area.	The Government of Canada accepts the intent of this recommendation to safeguard drinking water; however, it notes that any proposed limits should be consistent with the tritium standards put in place by the relevant regulatory authorities. Health Canada's *Guidelines for Canadian Drinking Water Quality*, based on the recommendations of the International Commission on Radiological Protection and the World Health Organization, establish a safe consumption guideline limit of 7,000 Bq/L for tritium in drinking water. This limit has been accepted as a standard by the Province of Ontario. Since water quality is primarily a provincial responsibility in Canada, the provinces may adopt federal guidelines, or may establish their own criteria. The Government of Canada further notes that the Canadian Nuclear Safety Commission regulates	Radiological Effluent Management Program, D-C-4.1

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
		potential releases of tritium to the environment from nuclear facilities by imposing regulatory limits as well as precautionary action levels for tritium releases into air or water on a licence-specific basis. These limits are set with a goal to protect human health. The Canadian Nuclear Safety Commission's *Radiation Protection Regulations* require that releases are kept "As Low As Reasonably Achievable" (ALARA), social and economic factors taken into account.	

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

DURING OPERATION

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
15	The Panel recommends that following the start of operation of the reactors, the Canadian Nuclear Safety Commission require OPG to conduct monitoring of ambient water and sediment quality in the receiving waters to ensure that effects from effluent discharges are consistent with predictions made in the environmental impact statement and with those made during the detailed design phase.	The Government of Canada accepts this recommendation to require OPG to conduct monitoring of ambient water and sediment quality in the receiving waters as recommended. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The Government of Canada notes that authorization under the *Fisheries Act* will be required prior to in-water works. Prior to the issuance of an authorization, Fisheries and Oceans Canada will require a water and sediment quality monitoring program. This program is required to assess whether OPG continues to meet the intent of section 36 of the *Fisheries Act*.	Water and Sediment Quality, D-P-12.3
23	The Panel recommends that Environment Canada collaborate with OPG to develop and implement a follow-up program to confirm the effectiveness of OPG's proposed mitigation measures for bird communities should natural draft cooling towers be chosen for the condenser cooling system.	The Government of Canada accepts the intent of this recommendation to collaborate with OPG to develop such a follow-up program for bird communities, and would further support the consideration of potential impacts from habitat disturbance, as well as from bird collision impacts, in the scope of that program. The Government of Canada acknowledges that the Canadian Nuclear Safety Commission has the statutory authority and powers to ensure such a follow-up program is implemented through future licensing under the *Nuclear Safety and Control Act*. Environment Canada can provide available scientific and	Birds, D-P-12.5

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
		technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	
36	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that during operation, the Canadian Nuclear Safety Commission require OPG to undertake adult fish monitoring of large-bodied and small-bodied fish to confirm the effectiveness of mitigation measures and verify the predictions of no adverse thermal and physical diffuser jet effects.	The Government of Canada accepts this recommendation to require OPG to undertake adult fish monitoring to confirm the effectiveness of mitigation measures and effect predictions. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. Fisheries and Oceans Canada is committed to working with OPG to develop their fish and fish habitat monitoring and follow-up program and ensuring implementation through conditions of authorization under the *Fisheries Act*.	Once-through Cooling, D-P-12.4, D-C-1.2
38	The Panel recommends that the Canadian Nuclear Safety Commission require that the geotechnical and seismic hazard elements of the detailed site geotechnical investigation to be performed by OPG include, but not be limited to: • Prior to site preparation: ○ demonstration that there are no undesirable subsurface conditions at the Project site. The overall site liquefaction potential shall be assessed with the site investigation data; and ○ confirmation of the absence of paleoseismologic features at the site and, if	The Government of Canada accepts the intent of this recommendation to require OPG's detailed site investigation to include the noted geotechnical and seismic hazard elements, however, notes that this investigation may be performed concurrently with site preparation activities. Natural Resources Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	Geotechnical, D-O-4.1

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	present, further assessment to reduce the overall uncertainty in the seismic hazard assessment during the design of the Project must be conducted. • During site preparation and/or prior to construction: ○ verification and confirmation of the absence of surface faulting in the overburden and bedrock at the site. • Prior to construction: ○ verification of the stability of the cut slopes and dyke slopes under both static and dynamic loads with site/Project-specific data during the design of the cut slopes and dykes or before their construction; ○ assessment of potential liquefaction of the northeast waste stockpile by using the data obtained from the pile itself upon completion of site preparation; ○ measurement of the shear strength of the overburden materials and the dynamic properties of both overburden and sedimentary rocks to confirm the site conditions and to perform soil-structure interaction analysis if necessary; ○ assessment of the potential settlement in the quaternary deposits due to the groundwater drawdown caused by future St. Marys Cement quarry activities; and,		

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	○ assessment of the effect of the potential settlement on buried infrastructures in the deposits during the design of these infrastructures. • Prior to operation: ○ development and implementation of a monitoring program for the Phase 4 St. Marys Cement blasting operations to confirm that the maximum peak ground velocity at the boundary between the Darlington and St. Marys Cement properties is below the proposed limit of three millimetres per second (mm/s).		
61	The Panel recommends that during operation, the Canadian Nuclear Safety Commission require OPG to monitor aquatic habitat and biota for potential cumulative effects from the thermal loading and contaminant plume of the discharge structures of the existing Darlington Nuclear Generating Station and the Project.	The Government of Canada accepts this recommendation to require OPG to monitor aquatic habitat and biota for potential cumulative effects from the thermal loading and contaminant plume. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The proponent will also be required to undertake an aquatic monitoring program as a condition of any *Fisheries Act* authorization.	Aquatic, D-P-12.4

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

OVER THE LIFE OF THE PROJECT

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
11	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to develop and implement a follow-up program for soil quality during all stages of the Project.	The Government of Canada accepts this recommendation to require OPG to develop and implement a follow-up program for soil quality. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	Soil Quality, D-P-12.6
28	The Panel recommends that Fisheries and Oceans Canada require OPG to continue conducting adult fish community surveys in the site study area and reference locations on an ongoing basis. These surveys shall be used to confirm that the results of 2009 gillnetting and 1998 shoreline electrofishing reported by OPG, and the additional data collected in 2010 and 2011, are representative of existing conditions, taking into account natural year-to-year variability. Specific attention should be paid to baseline gillnetting monitoring in spring to verify the findings on fish spatial distribution and relatively high native fish species abundance in the embayment area, such as white sucker and round whitefish. The shoreline electrofishing habitat use study is needed to establish the contemporary baseline for later use to test for effects of lake infill armouring, if employed, and the effectiveness of mitigation.	The Government of Canada accepts this recommendation. Fisheries and Oceans Canada will work with Environment Canada, the Canadian Nuclear Safety Commission, the Ontario Ministry of Natural Resources and OPG to develop the details of an ongoing fisheries monitoring program which will be included as a condition of a *Fisheries Act* authorization.	Aquatic, D-P-12.4, D-P-15.1
29	The Panel recommends that Fisheries and Oceans Canada require OPG to continue the research	The Government of Canada accepts this recommendation. Fisheries and Oceans Canada	Aquatic, D-P-12.4, D-P-15.1

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	element of the proposed Round Whitefish Action Plan for the specific purpose of better defining the baseline condition, including the population structure, genome and geographic distribution of the round whitefish population as a basis from which to develop testable predictions of effects, including cumulative effects.	will work with Environment Canada, Canadian Nuclear Safety Commission, Ontario Ministry of Natural Resources and OPG to develop and finalize the Round Whitefish Action Plan. This plan, as a condition of a *Fisheries Act* authorization, will form part of the ongoing monitoring program and feed into an adaptive management plan to protect the round whitefish population into the future.	
33	The Panel recommends that Fisheries and Oceans Canada require OPG to conduct an impingement and entrainment follow-up program at the existing Darlington Nuclear Generating Station and the Project site to confirm the prediction of adverse effects, including cumulative effects, and the effectiveness of mitigation. For future entrainment sampling for round whitefish, a statistical probability analysis will be needed to determine if unbiased and precise sample results can be produced.	The Government of Canada accepts this recommendation. Fisheries and Oceans Canada will work with the Canadian Nuclear Safety Commission and Ontario Power Generation to develop an impingement and entrainment study on the existing Darlington Nuclear Generating Station and at the proposed Project site to confirm predicted adverse effects and will further ensure implementation through its regulatory process and conditions of authorization under the *Fisheries Act*.	Aquatic, D-P-12.4
42	The Panel recommends that on an ongoing basis, OPG pursue its strategy to ensure that Aboriginal students can benefit from the permanent job opportunities that will be available during the lifetime of the Project. In this regard, OPG should collaborate with various secondary and post-secondary education institutions as well as Aboriginal groups to ensure that such programs would be successful.	The Government of Canada supports this proposal and notes that such programs are consistent with OPG's presentation to the Panel on Aboriginal Interests on March 28, 2011 and with OPG's *Aboriginal Relations Policy*.	Aboriginal Programs, D-P-17.1
56	The Panel recommends that over the life of the Project, the Canadian Nuclear Safety Commission	The Government of Canada accepts this recommendation to require OPG to conduct	Air Quality, D-P-12.2

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	require OPG to conduct ambient air monitoring in the local study area on an ongoing basis to ensure that air quality remains at levels that are not likely to cause adverse effects to human health.	ambient air monitoring to ensure that air quality is not likely to cause adverse effects to human health. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

JRP RECOMMENDATIONS FOR CNSC AND OTHER GOVERNMENT ORGANIZATIONS

#	JRP Recommendation	Government of Canada Response	Responsible Party and Project Phase
62	The Panel recommends that prior to site preparation, Environment Canada evaluate the need for additional air quality monitoring stations in the local study area to monitor cumulative effects on air quality.	The Government of Canada accepts this recommendation to evaluate the need for additional air quality monitoring stations in the local study area to monitor cumulative effects on air quality. If this evaluation finds that additional air quality monitoring stations in the local study area are required, the Government of Canada acknowledges that the Canadian Nuclear Safety Commission has the statutory authority and powers to address the findings of this recommendation through future licensing under the *Nuclear Safety and Control Act*.	ECCC Prior to Site Preparation
48	In consideration of public safety, the Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission coordinate a committee of federal, provincial and municipal transport authorities to review the need for road development and modifications	The Government of Canada accepts the intent of this recommendation to support a federal, provincial and municipal review of the need for road development and modifications, however, notes that this review may be performed concurrently with site preparation activities.	CNSC During Site Preparation
1	The Panel understands that prior to construction, the Canadian Nuclear Safety Commission will determine whether this environmental assessment is applicable to the reactor technology selected by the Government of Ontario for the Project. Nevertheless, if the selected reactor technology is fundamentally different from the specific reactor technologies bounded by the Plant Parameter	The Government of Canada accepts the intent of this recommendation, but acknowledges that any RA under the CEAA will need to determine whether the future proposal by the proponent is fundamentally different from the specific reactor technologies assessed by the JRP and if a new EA is required under the CEAA.	CNSC Prior to Construction

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	Responsible Party and Project Phase
	Envelope, the Panel recommends that a new environmental assessment be conducted.		
60	The Panel recommends that prior to construction, the Government of Canada review the adequacy of the provisions for nuclear liability insurance. This review must include information from OPG and the Region of Durham regarding the likely economic effects of a severe accident at the Darlington Nuclear site where there is a requirement for relocation, restriction of use and remediation of a sector of the regional study area.	The Government of Canada accepts the intent of this recommendation, that the Government of Canada review the adequacy of the provisions for nuclear liability insurance. In bringing forward modernized nuclear civil liability legislation to replace the current Nuclear Liability Act, the Government of Canada will continue to review the adequacy of the provisions for nuclear liability insurance, taking into consideration the risk of Canadian nuclear installations and other relevant factors.	Government of Canada Prior to Construction
66	The Panel recommends that the Government of Canada update the *Nuclear Liability and Compensation Act* or its equivalent to reflect the consequences of a nuclear accident. The revisions must address damage from any ionizing radiation and from any initiating event and should be aligned with the polluter pays principle. The revised *Nuclear Liability and Compensation Act*, or its equivalent, must be in force before the Project can proceed to the construction phase.	The Government of Canada accepts the intent of this recommendation, that the Government of Canada update the *Nuclear Liability and Compensation Act* or its equivalent to reflect the consequences of a nuclear accident. The Government of Canada recognizes the importance of bringing forward modernized nuclear civil liability legislation to bring compensation in line with internationally-accepted levels, and will decide on the timing of the next introduction of the *Nuclear Liability and Compensation Act* bill in Parliament.	Government of Canada Prior to Construction
4	The Panel recommends that the Canadian Nuclear Safety Commission exercise regulatory oversight to ensure that OPG complies with all municipal and provincial requirements and standards over the life	The Government of Canada accepts this recommendation, however recognizes that it is the responsibility of provincial and municipal officials	CNSC

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	Responsible Party and Project Phase
	of the Project. This is of particular importance because the conclusions of the Panel are based on the assumption that OPG will follow applicable laws and regulations at all jurisdictional levels.	to ensure compliance with their own requirements and standards over the life of the Project.	Over the Life of the Project
43	The Panel recommends that the Canadian Nuclear Safety Commission engage appropriate stakeholders, including OPG, Emergency Management Ontario, municipal governments and the Government of Ontario to develop a policy for land use around nuclear generating stations.	The Government of Canada accepts this recommendation for the Canadian Nuclear Safety Commission to engage appropriate stakeholders in developing policy for land use around nuclear generating stations.	CNSC Over the Life of the Project
44	The Panel recommends that the Government of Ontario take appropriate measures to prevent sensitive and residential development within three kilometres of the site boundary.	This recommendation was directed to the Government of Ontario.	Government of Ontario Over the Life of the Project
45	The Panel recommends that the Municipality of Clarington prevent, for the lifetime of the nuclear facility, the establishment of sensitive public facilities such as school, hospitals and residences for vulnerable clienteles within the three kilometre zone around the site boundary.	This recommendation was directed to the Municipality of Clarington.	Municipality of Clarington Over the Life of the Project
46	Given that a severe accident may have consequences beyond the three and 10 kilometre zones evaluated by OPG, the Panel recommends that the Government of Ontario, on an ongoing basis, review the emergency planning zones and the emergency preparedness and response measures, as defined in the Provincial Nuclear Emergency	This recommendation was directed to the Government of Ontario.	Government of Ontario Over the Life of the Project

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	Responsible Party and Project Phase
	Response Plan (PNERP), to protect human health and safety.		
55	The Panel recommends that Health Canada and the Canadian Nuclear Safety Commission continue to participate in international studies seeking to identify long-term health effects of low-level radiation exposures, and to identify if there is a need for revision of limits specified in the *Radiation Protection Regulations*.	The Government of Canada accepts the recommendation to continue its participation in international studies seeking to identify long-term health effects of low-level radiation exposures. The Government of Canada accepts the intent of the recommendation to identify if there is a need for revision of limits specified in the *Radiation Protection Regulations* based on the results of international studies. Health Canada and the Canadian Nuclear Safety Commission will continue to participate in international studies dealing with long-term health effects of low-level radiation exposures; participate in committees/working groups with relevant international organizations; and, regularly review the reports published by these international groups for developments in radiation protection. Health Canada can provide expertise to the Canadian Nuclear Safety Commission, upon request, in support of the review of limits specified in the *Radiation Protection Regulations*.	Health Canada, CNSC Over the Life of the Project
59	The Panel recommends that the Municipality of Clarington manage development in the vicinity of the Project site to ensure that there is no deterioration in the capacity to evacuate members of the public for the protection of human health and safety.	This recommendation was directed to the Municipality of Clarington.	Municipality of Clarington Over the Life of the Project

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	Responsible Party and Project Phase
65	The Panel recommends that the Government of Canada make it a priority to invest in developing solutions for long-term management of used nuclear fuel, including storage, disposal, reprocessing and re-use.	The Government of Canada accepts the intent of this recommendation that priority be given to invest in solutions for the long-term management of used nuclear fuel. It is the responsibility of waste owners to fund and manage the safe and secure operation of their wastes. The Nuclear Waste Management Organization, established by the nuclear energy corporations, is responsible for implementing the government selected plan for managing nuclear fuel waste over the long-term. The Government of Canada is committed to ensuring that an appropriate and properly funded long-term safe and secure solution is in place for the managing nuclear fuel waste over long term.	Government of Canada Over the Life of the Project
64	The Panel recommends that the Canadian Environmental Assessment Agency revise the Canadian Environmental Assessment Agency Cumulative Effects Practitioner's Guide to specifically include consideration of accident and malfunction scenarios.	The Government of Canada accepts this recommendation. The Canadian Environmental Assessment Agency is in the process of updating its suite of instruments in support of cumulative effects assessment under the CEAA. An operational policy statement, scheduled for completion by December 2012, will provide core guidance to practitioners and include the consideration of accidents and malfunctions.	CEAA/IAA General
67	The Panel recommends that the Government of Canada provide clear and practical direction to the application of sustainability assessment in	The Government of Canada accepts the intent of this recommendation. However, the scope of the assessment and the factors to be considered in future EAs for nuclear projects are decisions that should be	Government of Canada General

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

#	JRP Recommendation	Government of Canada Response	Responsible Party and Project Phase
	environmental assessments for future nuclear projects.	taken on a project-by-project basis by future Responsible Authorities. Recognizing that sustainable development is a principle of the *Canadian Environmental Assessment Act*, should a separate sustainability assessment be required by Responsible Authorities for future nuclear projects, the Government of Canada agrees that it would be desirable for those Responsible Authorities to provide clear and practical direction to proponents and the public on how a sustainability assessment should be conducted.	

APPENDIX C – Government of Canada Response to Joint Review Panel Report Recommendations

APPENDIX D – RESOLUTION OF CONFLICTS OR INCONSISTENCIES

L.C.	Subject of Conflict or Inconsistency	e-Doc #	Identifier	Approved Date

Proposed Construction Licence

The proposed Power Reactor Construction Licence (PRCL) 32.00/2035 is provided on the following pages.

I) LICENCE NUMBER: PRCL 32.00/2035

II) LICENSEE:

Pursuant to subsection 24(4) of the *Nuclear Safety and Control Act*, this licence is issued to:

Ontario Power Generation (OPG), Incorporated
700 University Avenue
Toronto, Ontario M5G 1X6

III) LICENCE PERIOD:

This licence is valid from: **April 01, 2025** to **March 31, 2035** unless otherwise suspended, amended, revoked, or replaced.

IV) LICENSED ACTIVITIES:

This licence authorizes the licensee to:

i) Prepare the Darlington Nuclear site, comprising the following activities:

a. Construction of site access control measures;

b. Clearing and grubbing of vegetation;

c. Excavation and grading of the site to a finished elevation of approximately +78 masl (metres above sea level);

d. Installation of services and utilities (domestic water, fire water, sewage, electrical, communications, natural gas) to service the future nuclear facility;

e. Construction of administrative and support buildings inside the future protected area;

f. Construction of environmental monitoring and mitigation systems; and

g. Construction of flood protection and erosion control measures.

ii) Construct a single BWRX-300 nuclear reactor and supporting infrastructure at the Darlington New Nuclear site.

iii) Possess and use prescribed information that is required for, associated with, or arises from the activities described in (i) or (ii) above.

V) EXPLANATORY NOTES:

i) Nothing in this licence shall be construed to authorize non-compliance with any other applicable legal obligation or restriction.

ii) Unless otherwise provided for in this licence, words and expressions used in this licence have the same meaning as in the *Nuclear Safety and Control Act* and associated Regulations.

iii) The "OPG DARLINGTON NEW NUCLEAR PROJECT (DNNP) POWER REACTOR CONSTRUCTION LICENCE (PRCL) Licence Conditions Handbook (LCH)" provides compliance verification criteria including the Canadian standards and regulatory documents used to verify compliance with the conditions in the licence. The LCH also provides information regarding delegation of authority, applicable versions of documents, and non-mandatory recommendations and guidance on how to achieve compliance.

VI) CONDITIONS:

G. GENERAL

G.1 The licensee shall conduct the activities described in Part IV of this licence in accordance with the licensing basis, defined as:

i) The regulatory requirements set out in the applicable laws and regulations;

ii) The conditions and safety and control measures described in the facility's or activity's licence and the documents directly referenced in that licence; and

iii) The safety and control measures described in the licence application and the documents needed to support that licence application.

Unless otherwise approved in writing by the Canadian Nuclear Safety Commission (CNSC, hereinafter "the Commission").

G.2 The licensee shall give written notification of changes to the facility or its operation, including the deviation from design, operating conditions, policies, programs, and methods referred to in the licensing basis.

G.3 The licensee shall control the use and occupation of any land within the exclusion zone.

G.4 The licensee shall provide, at the nuclear facility and at no expense to the Commission, suitable office space for employees of the Commission who customarily carry out their functions on the premises of that nuclear facility (onsite Commission staff).

G.5 The licensee shall maintain a financial guarantee for decommissioning that is acceptable to the Commission.

G.6 The licensee shall implement and maintain a public information and disclosure program.

1. Management System

1.1. The licensee shall implement and maintain a management system.

2. Human Performance Management

2.1. The licensee shall implement and maintain a human performance program.

2.2. The licensee shall implement and maintain a training program.

3. Operating Performance

3.1. The licensee shall implement and maintain an operations program.

3.2. The licensee shall notify and report in accordance with the periods and requirements of CNSC Regulatory Document REGDOC-3.1.1 – Reporting Requirements for Nuclear Power Plants.

3.3. The licensee shall implement a construction and commissioning program.

4. Safety Analysis

4.1. The licensee shall implement and maintain a safety analysis program.

5. Physical Design

5.1. The licensee shall implement and maintain a design program.

5.2. The licensee shall implement and maintain a pressure boundary program and have in place a formal agreement with an Authorized Inspection Agency.

5.3. The licensee shall implement and maintain an equipment and structure qualification program.

6. Fitness for Service

6.1. Not applicable.

7. Radiation Protection

7.1. The licensee shall implement and maintain a radiation protection program.

8. Conventional Health and Safety

8.1. The licensee shall implement and maintain a conventional health and safety program.

9. Environmental Protection

9.1. The licensee shall implement and maintain an environmental protection program.

10. Emergency Management and Fire Protection

10.1. The licensee shall implement and maintain an emergency preparedness program.

10.2. The licensee shall implement and maintain a fire protection program.

11. Waste Management

11.1. The licensee shall implement and maintain a waste management program.

11.2. The licensee shall implement and maintain a decommissioning plan.

12. Security

12.1. The licensee shall implement and maintain a security program.

13. Safeguards and Non-Proliferation

13.1. The licensee shall implement and maintain a safeguards program.

14. Packaging and Transport

14.1. Not applicable.

15. Site Specific

15.1. The licensee shall implement the mitigation measures proposed and commitments made during the Darlington Joint Review Panel process, including the applicable recommendations of the Darlington Joint Review Panel Report, in accordance with the Government of Canada response.

15.2. The licensee shall implement and maintain an environmental assessment follow-up program.

15.3. The licensee shall obtain the approval of the Commission, or consent of a person authorized by the Commission, prior to the removal of established regulatory hold points.

SIGNED at Ottawa on [date signed]

X

President, Canadian Nuclear Safety Commiss...

Draft Licence Conditions Handbook

The draft *Licence Conditions Handbook* is provided on the following pages of the CMD.

Canada's Nuclear Regulator

e-Doc 7170010 (Word)
e-Doc 7278956 (PDF)

LICENCE CONDITIONS HANDBOOK

LCH-PRCL-DNNP

ONTARIO POWER GENERATION (OPG)
DARLINGTON NEW NUCLEAR PROJECT (DNNP)

POWER REACTOR CONSTRUCTION LICENCE (PRCL)

PRCL 32.00/2035

DRAFT

Canadian Nuclear Safety Commission
Commission canadienne de sûreté nucléaire
Canada

Licence Conditions Handbook **Effective Date: DD MM 2025**

LCH-PRCL-DNNP

Associated with:
Ontario Power Generation
Darlington New Nuclear Project
PRCL 32.00/2035

SIGNED at OTTAWA this Xth day of month 2025

Sarah Eaton
Director General
Directorate of Advanced Reactor Technologies
CANADIAN NUCLEAR SAFETY COMMISSION

Revision History:

Effective Date	Revision	Word e-Doc and Version	Description of the Changes	DCR e-Doc
Month day, 20XX	0		Original Document	7235132

TABLE OF CONTENTS

INTRODUCTION

The general purpose of the Licence Conditions Handbook (LCH) is to identify and clarify the relevant parts of the licensing basis for each licence condition (LC). This will help ensure that the licensee conducts the activities described in the licence in accordance with the licensing basis for the facility and the intent of the licence. The LCH should be read in conjunction with the licence.

The LCH typically has three parts under each LC: the Preamble, Compliance Verification Criteria (CVC), and Guidance. The Preamble explains, as needed, the regulatory context, background, and/or history related to the LC. CVC are criteria used by CNSC staff to verify and oversee compliance with the LC. Guidance is non-mandatory information, including direction, on how to comply with the LC.

Throughout the licence, the statement "or consent of a person authorized by the Commission" reflects to whom the Commission may delegate certain authority (hence "consent") to CNSC staff. Unless otherwise indicated in the CVC of specific LCs in this LCH, the delegation of authority by the Commission to act as a "person authorized by the Commission" is only applied to the incumbents of the following position(s):

- Executive Vice-President and Chief Regulatory Operations Officer, Regulatory Operations Branch

Interaction between the licensee and CNSC staff that is described in this LCH is governed by the prevailing communications protocol between the two, unless specified otherwise in the LCH.

Current versions of the licensee documents listed in this LCH are recorded in *Darlington New Nuclear Project – LCH Control and Administration* (e-Doc 7177312), which is controlled by the Advanced Reactors Licensing Division and is available to the licensee upon request. The content of this LCH is an input to the compliance program for this facility.

This LCH has the following appendices.

- Appendix A, which describes a set of common administrative practices concerning this LCH,
- Appendix B, which lists all version-controlled documents referenced in this LCH
- Appendix C, which lists all licensee documents that require written notification of change
- Appendix D, which lists all documents referenced within the CVC or Recommendations or Guidance sections in this LCH;
- Appendix E, which lists all Government of Canada responses to Joint Review Panel report recommendations and their corresponding OPG Commitment number
- Appendix F, which lists all resolutions to conflicts and inconsistencies with this Licence Conditions Handbook.

G GENERAL

G.1 Licensing Basis for the Licensed Activities

Licence Condition:

The licensee shall conduct the activities described in Part IV of this licence in accordance with the licensing basis, defined as:

i. **The regulatory requirements set out in the applicable laws and regulations;**
ii. **The conditions and safety and control measures described in the facility's or activity's licence and the documents directly referenced in that licence;**
iii. **The safety and control measures described in the licence application and the documents needed to support that licence application;**

Unless otherwise approved in writing by the Canadian Nuclear Safety Commission (hereinafter, "the Commission").

Preamble:

The licensing basis is discussed in CNSC document REGDOC-3.5.3 – *Regulatory Fundamentals, version 2 (2021)*.

The licensing basis sets out the boundary conditions for acceptable performance at a regulated facility or activity, thus establishing the basis for the CNSC compliance program with respect that regulated facility or activity. This LCH aligns specific parts to the licensing basis with each LC. For those LCs that require the licensee to implement and maintain a particular program, the licensing basis includes the licensee document(s) that describe the program. This could be a single document, or multiple documents, depending on the licensee's document structure.

Pursuant to section 26 of the *Nuclear Safety and Control Act*, no person may conduct activities involving nuclear materials except in accordance with a licence. For greater clarity, the licensed activities are those described in Part IV of Power Reactor Construction Licence PRCL 32.00/2035. The activity licensed by the PRCL is the "construction," within the meaning of paragraph 26(e) of the *Nuclear Safety and Control Act*, of one new Nuclear Generating Station at the Darlington New Nuclear Project (DNNP) site with an approximate net electrical output of approximately 300 megawatts electric (MWe) to supply the Ontario grid.

The PRCL also includes the completion of any remaining activities within the scope of the site preparation licence (PRSL 18.00/2031) related to the single BWRX-300 reactor. For greater clarity, these activities include the construction of erosion and flood control measures, construction of administrative structures, and establishment of services to enable the construction of the BWRX-300 reactor (e.g., electrical power, IT infrastructure, etc.). The PRCL does not

permit activities directly related to the loading of nuclear fuel and subsequent operation of the nuclear facility's structures, systems, or components.

Compliance Verification Criteria:

Part (i) of the licensing basis lists the applicable laws and regulations that are set out in several federal statutes and agreements, including the following:

- *Nuclear Safety and Control Act;*
- *Canadian Environmental Assessment Act;*
- *Canadian Environmental Protection Act;*
- *Nuclear Liability and Compensation Act*
- *Transportation of Dangerous Goods Act, 1992;*
- *Radiation Emitting Devices Act;*
- *Access to Information Act; and*
- *Canada/IAEA Safeguards Agreement.*

Parts (ii) and (iii) of the licensing basis consists of the safety and control measures described in the licence, a licence application, and the documents needed to support that licence application. The safety and control measures include important aspects of that documentation, as well as important aspects of analysis, design, operation, etc. They may be found in high-level, programmatic licensee documents but might also be found in lower-level, supporting licensee documentation.

Parts (ii) and (iii) of the licensing basis also includes safety and control measures in the CNSC regulatory documents, CSA standards, and other standards and references that are cited in the licence, the licence application, or in the licensee's supporting documentation. Those support documents could cite other documents that also contain safety and control measures (i.e., there may be safety and control measures in "nested" references in the application).

LC G.1 requires the licensee to conform to, and/or implement, all the safety and control measures. Note, however, that not all details in referenced documents are necessarily considered to be safety and control measures—for example:

- Details that are not directly relevant to safety and control measures for facilities or activities authorised by the licence are excluded from the licensing basis; and
- Details that are relevant to a different safety and control area (i.e., not the one associated with the main document), are only part of the licensing basis to the extent they are consistent with the main requirements for both safety and control areas.

The licensing basis is established by the Commission at the time the licence is issued. Per LC G.1, conduct of activities during the licence period that is not in accordance with the licensing

General

basis is only allowed based on the written approval of the Commission. Similarly, only the Commission can change the licensing basis during the licence period; and this would be recorded in writing.

The licensing basis for the facility also includes the basis for the design of the reactor, and the associated safety assessments that provide inputs into the design. Safety assessments are an iterative, systematic, process that is applied throughout the design phase to ensure that the design meets all relevant safety requirements. The safety assessment iterates between the design and analysis and shall identify aspects of the operation, maintenance, and management of the design that are important to safety. It is understood that the safety assessments will increase in scope and level of detail as the design of the facility progresses. Changes to the licensing basis that are not in the safe direction require further assessment of impact to determine if prior Commission approval is required.

Where the licensing basis refers to specific configurations, methods, solutions, designs etc., the licensee is free to propose alternate approaches that differ from those in the CVC as long as they remain in accordance with the licensing basis for the facility.

This LC is not intended to unduly inhibit the ongoing management and conduct of licensed activities of the facility or the licensee's ability to adapt to changing circumstances and continuously improve. This LC does not explicitly prohibit changes (such as in management or conduct of licensed activities) with a neutral or positive impact on safety. Changes shall be in accordance with the licensing basis and shall be made in accordance with the licensee's management system (see LC 1.1). Changes to licensee documents may require written notification to the CNSC, even if they are in accordance with the licensing basis; see LC G.2.

For unapproved activities that are not in accordance with the licensing basis, the licensee shall take action as soon as practicable to return to a state consistent with the licensing basis, taking into account the risk significance of the situation.

In the event of any conflict or inconsistency between two elements of the licensing basis, the licensee shall direct the conflict or inconsistency to CNSC staff for resolution. Any such conflict or inconsistency identified would be discussed between the licensee and CNSC staff; the outcome of such discussions will be documented to ensure a common understanding.

Resolutions made pursuant to this LC are recorded in Appendix F of this LCH. This appendix lists the subject of the conflict or inconsistency and will give the reference to the electronic record (e-Doc #######) documenting the resolution as well as the licensee's identifying correspondence number. Any resolution made will be formally communicated to all other power reactor licensees as appropriate, ensuring consistency of CNSC regulatory oversight amongst all nuclear facilities in Canada. The appropriate changes will be reflected in the CVC of the affected LC and compliance to the resolution will therefore be subject to verification.

Licensing Basis Publications

General

Document Number	Document Title	Version	Effective Date
REGDOC-2.5.2*	Design of Reactor Facilities	2014	31 December 2021

* Note: *This REGDOC forms part of the licensing basis documents and assessments supporting the removal of regulatory hold points. CNSC staff will assess the state of the design against the applicable regulatory documents and industry codes and standards. CNSC staff note that OPG will not be in full compliance with REGDOC-2.5.2 until the design has been completed and the results from commissioning have been reviewed and incorporated into the design basis.*

Licensing Basis Documents:

Date	Document Title	Document Number	e-Doc #
31 October 2022	Darlington New Nuclear Project - Application for a Licence to Construct a Reactor Facility	NK054-CORR-00531-10738	6903986
31 October 2022	DNNP - Submission of Package #1 Management Aspects Deliverables in Support of the Licence to Construct Application for CNSC Review	NK054-CORR-00531-10735	6904000
31 October 2022	Submission of Package #2(a) Design and Safety Analysis Deliverables in Support of the Licence to Construct Application for the CNSC Review	NK054-CORR-00531-10736	6904832
31 October 2022	Submission Package #2(b) – Design and Safety Analysis Deliverables in Support of the Licence to Construct Application for the CNSC Review	NK054-CORR-00531-10737	6911109
31 October 2022	DNNP – Submission of Package #3 Security Deliverables in Support of the Licence to Construct Application for the CNSC Review	NK054-CORR-00531-10740	Security Confidential

General

Date	Document Title	Document Number	e-Doc #
16 November 2022	DNNP – Submission of Package #4 Environmental Monitoring & EA Follow-up in Support of the Licence to Construct Application for the CNSC Review	NK054-CORR-00531-10741	6915616
28 February 2023	DNNP – Submission of Package #5(a) Core Control Processes and Operations Aspects Deliverable in Support of the Licence to Construct Application for the CNSC Review	NK054-CORR-00531-10751	6989978
28 February 2023	DNNP – Submission of Package #5(b) Core Control Processes and Operations Aspects Deliverable in Support of the Licence to Construct Application for the CNSC Review	NK054-CORR-00531-10766	6989994
31 March 2023	DNNP – Submission of Package #6(a) – Construction & Commissioning Program Deliverables - in Support of the Licence to Construct Application for the CNSC Review	NK054-CORR-00531-10774	7006125
31 March 2023	DNNP – Submission of Package #6(b) – Construction & Commissioning Program Confidential Deliverables - in Support of the Licence to Construct Application for the CNSC Review	NK054-CORR-00531-10775	7011354
31 March 2023	Ontario Power Generation Inc. Darlington New Nuclear Project - BWRX-300 Preliminary Safety Analysis Report	NK054-SR-01210-00001	7006206

General

Recommendations and Guidance:

When the licensee becomes aware that a proposed change or activity might be outside the licensing basis, it should first seek direction from CNSC staff regarding the potential acceptability of this change or activity. The licensee should take into account that certain types of proposed changes might require significant lead times before CNSC staff can make recommendations and/or the Commission can properly consider them.

G.2 Notification of Changes

Licence Condition:

The licensee shall give written notification of changes to the facility or its operation, including the deviation from design, operating conditions, policies, programs, and methods referred to in the licensing basis.

Preamble:

The licensing basis sets the boundary conditions for acceptable performance at a regulated facility or activity and thus establishes the basis for the CNSC's compliance program in respect of that regulated facility or activity. Licensees are required to conduct licensed activities in accordance with the licensing basis; however, as changes to the documents included or referenced in the licence application are to be expected during the licensing period, licensees are expected to assess changes for impact on the licensing basis. Any changes to the licensing basis require evaluation to determine impact as related to the provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

In general, it is expected that changes for which the licensee shall notify the CNSC will be captured as changes to specific licensee documents. This LCH identifies licensee documents that require written notification (WN) of changes to the CNSC. They are primarily selected from the set of documents supporting the application and which describe the licensee's safety and control measures (part (iii) of the licensing basis, as defined in LC G.1). In identifying the WN documents for each LC, CNSC staff select licensee documents that provide reasonable assurance that adequate safety and control measures are in place to satisfy the LC. See LC G.1 for additional discussion of the licensing basis.

Tables under each LC in the LCH identify the documents (if any) requiring written notification of change. WN documents are subdivided into ones that require prior written notification of changes and those that require written notification only (changes implemented at the time of notification).

CNSC staff will track the version history of all WN documents cited in the LCH with the exception of security-related documents. The document *Darlington New Nuclear Project – LCH Control and Administration* (e-Doc 7177312) has been created for this purpose.

Compliance Verification Criteria:

Licensee Documents that Require Notification of Change

The following document(s) require written notification of change:

General

Document Title	Document #	Prior Notification
Information Management	OPG-PROG-001	No

The changes for which CNSC requires written notification of change consist of those captured as changes to specific licensee documents, which are identified throughout this LCH under the most relevant LC. These documents represent the minimum subset of documents. The licensee shall, as a minimum, provide written notification to the CNSC of changes to the specific licensee documents identified in this LCH.

Recognising that the design of the reactor is iterative, being driven by advancements in the safety assessment and further clarity in the design, the documented basis for the design will also continue to mature. This LC is not intended to require OPG provide regular notification of updates to design basis documentation, unless the change may have an impact on the safety case for the facility.

Written notification (WN) is defined as a physical or electronic communication from a person authorized to act on behalf of the licensee to a CNSC delegated authority or a CNSC staff member acting on behalf of a CNSC delegated authority. WN documents are subdivided into ones that require prior written notification of changes and those that require written notification only. For the former type, the licensee shall submit the WN to the CNSC prior to implementing the change. Typically, the requirement is to submit the proposed changes 30 days prior to planned implementation; however, the licensee shall allow sufficient time for the CNSC to review the change proportionate to its complexity and the importance of the safety and control measures being affected. For the latter type, the licensee need only submit the WN at the time of implementing the change. All WNs shall include a summary description of the change, the rationale for the change, and a summary explanation of how the licensee has concluded that the changed document remains in accordance with the licensing basis. A copy of the revised WN document shall accompany the notification.

Changes to the licensing basis that are not in the safe direction require further assessment of impact to determine if prior Commission approval is required in accordance with LC G.1.

In the event of a discrepancy between the tables in any section of this LCH that contain numbers and limits drawn from licensee documents and the licensee documentation upon which they are based, the licensee documentation shall be considered the authoritative source, provided that their change control process was followed. Since these limits are considered safety and control measures, any change to them in the licensee documents listed in the WN tables will be reviewed by CNSC staff to confirm they remain within the licensing basis.

General

Should a change to a WN document listed in this LCH also require submission for approval/acceptance per a standard referenced in the PRCL, the licensee shall submit that document for approval/acceptance to comply with the governing standard and the associated LC. Submission of a proposed WN document for approval, in accordance with a LC does not alleviate the licensee from also providing the written notification of the revised (approved) document.

Appendix B of the LCH lists the key OPG documents which are deemed to contain the safety and control measures for the licensed activities that form part of the licensing basis. The licensee shall follow OPG-PROG-0001 – *Information Management*, for any changes related to a document listed in Appendix B.

Recommendations and Guidance:

A list of criteria that could help determine if a change would be in accordance with the licensing basis is provided in Appendix A of CNSC internal document *Overview of assessing licensee changes to documents or operations*, e-Doc 4055483. Such criteria would also be used if the change requires CNSC staff acceptance, due to other requirement in the licensing basis.

For proposed changes that would not be in accordance with the licensing basis, the Recommendations and Guidance for LC G.1 apply.

G.3 Land Use and Occupation

Licence Condition:

The licensee shall control the use and occupation of any land within the exclusion zone.

Preamble:

The *General Nuclear Safety and Control Regulations* require that a licence application contain a description of the nuclear facility.

Compliance Verification Criteria:

The licensee shall ensure that the use and occupancy of land within the exclusion zone does not compromise the safety and control measures in the licensing basis. Specifically, the licensee shall consider emergency preparedness and ALARA with respect to land use within the exclusion zone. This applies to land the licensee occupies as well as to land occupied by others.

The licensee shall not permit a permanent dwelling to be built within the exclusion zone. "Permanent dwelling" refers to housing that is meant to be fixed. The licensee may erect, for a short time without prior notification, a temporary dwelling (e.g., a trailer).

The licensee shall notify the CNSC of changes to the use and occupation of any land within the exclusion zone. The notice shall be submitted prior to the change, with lead time in proportion to the expected impact of the change on the licensee's safety and control measures.

The licensee shall notify the CNSC of changes to the agreement with the Municipality of Clarington, which ensures safe public access to the waterfront trail that traverses the Darlington site.

Licensee Documents that Require Notification of Change

The following documents require written notification of change:

Document Title	Document #	Prior Notification
OPG New Nuclear at Darlington Survey Drawing	NK054-DRAW-01210-00007	Yes
Exclusion Zone Determination for Darlington New Nuclear Project	NK054-REP-01210-00003	Yes

General

The Darlington New Nuclear Project site is located on the Darlington Nuclear site, in the Township of Darlington, in the Municipality of Clarington, in the Regional Municipality of Durham, in the Province of Ontario. It is further described in NK054-DRAW-01210-00007 and NK054-REP-01210-00008 (known as *OPG New Nuclear at Darlington Survey Drawings*).

The proposed exclusion zone is no more than 500 metres from the exterior of any reactor building.

The documents shall be revised to reflect any transfer of land within the exclusion zone to non-licensee ownership.

Recommendations and Guidance:

The licensee should notify the CNSC of any sensitive land uses proposed within 3 kilometres of the DNNP site as a result of any policy changes for land use surrounding nuclear generating stations.

General

G.4 Office for CNSC On-Site Inspectors

Licence Condition:

The licensee shall provide, at the nuclear facility and at no expense to the Commission, suitable office space for employees of the Commission who customarily carry out their functions on the premises of that nuclear facility (onsite Commission staff).

Preamble:

CNSC staff require suitable office space and equipment at the Darlington New Nuclear Project site in order to satisfactorily carry out its regulatory activities.

Compliance Verification Criteria:

Any changes of accommodation or equipment shall be made based on discussion, and subsequent agreement, between the CNSC and the licensee.

Recommendations and Guidance:

None.

G.5 Financial Guarantee

Licence Condition:

The licensee shall maintain a financial guarantee for decommissioning that is acceptable to the Commission.

Preamble:

The *General Nuclear Safety and Control Regulations* requires that a licence application contain a description of any proposed financial guarantee relating to the activity to be licensed.

The licensee is responsible for all costs of implementing the proposed decommissioning plans, and providing an appropriate financial guarantee that is acceptable to the Commission.

It is expected that OPG will provide an appropriate financial guarantee in accordance with REGDOC-3.3.1 – *Financial Guarantees for the Decommissioning of Licensed Activities*, commensurate with the decommissioning financial liabilities.

Compliance Verification Criteria:

Licensing Basis Documents

Document Number	Document Title	Version	Effective Date
REGDOC-3.3.1	Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities	2021	31 December 2021

Licensee Documents that Require Notification of Change

Document Title	Document #	Prior Notification
Documentary Information Summary: DNNP Licence to Construct Financial Guarantee	NK054-REP-00531-10004	Yes

The financial guarantee for decommissioning the nuclear facility shall be reviewed and revised by the licensee every five years, when the Commission requires, or following a revision of the preliminary decommissioning plan that significantly impacts the financial guarantee.

General

G.6 Public Information and Disclosure

Licence Condition:

The licensee shall implement and maintain a public information and disclosure program.

Preamble:

A public information and disclosure program (PIDP) is a regulatory requirement for licence applicants and licensees under the *Class I Nuclear Facilities Regulations*, which requires that a licence application contain a program to inform persons living in the vicinity of the site of the general nature and characteristics of the anticipated effects of the licensed activity on the environment, health, and safety of persons.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-3.2.1	Public Information and Disclosure	2018	12 October 2021

Licensee Documents that Require Notification of Change

The following document(s) require written notification of change:

Document Title	Document #	Prior Notification
Nuclear Public Information Disclosure	N-STD-AS-0013	No

The licensee shall implement and maintain a program for public information and disclosure. This program shall comply with the requirements set out in regulatory document REGDOC-3.2.1 – *Public Information and Disclosure*.

Where the public has indicated an interest to know, the PIDP shall include a commitment to and disclosure protocol for, ongoing and timely communication of information related to the licensed facility during the course of the licensing period.

Recommendations and Guidance:

None.

General

1 SCA – MANAGEMENT SYSTEM

1.1 Management System

The Safety and Control Area "Management System" covers the framework which establishes the processes and programs required to ensure an organization achieves its safety objectives, continuously monitors its performance against these objectives, as well as fostering a healthy safety culture.

Licence Condition:

The licensee shall implement and maintain a management system.

Preamble:

The *General Nuclear Safety and Control Regulations* require that a licence application contain information related to the organizational management structure and responsibilities.

The *Class I Nuclear Facilities Regulations* require that a licence application contain the proposed management system, including the quality assurance program for the design of the nuclear facility.

Safe and reliable operation requires a commitment and adherence to a set of management system principles and, consistent with those principles, the establishment and implementation of processes that achieve the expected results. CSA standard N286 – *Management System Requirements for Nuclear Facilities*, contains the requirements for a management system throughout the life cycle of a nuclear power plant and extends to all safety and control areas.

The management system must satisfy the requirements set out in the regulations made pursuant to the *Nuclear Safety and Control Act*, the licence, and the measures necessary to ensure that safety is of paramount consideration in implementation of the management system. An adequately established and implemented management system provides CNSC staff confidence and evidence that the licensing basis remains valid.

Compliance Verification Criteria:

The licensee shall implement and maintain a management system. This management system shall comply with the requirements set out in CSA standard N286 – *Management system requirements for nuclear facilities*.

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-2.1.2	Safety Culture	2018	31 December 2021
REGDOC-2.3.1	Conduct of Licensed Activities: Construction and Commissioning Programs	1	31 December 2021
REGDOC-2.5.2	Design of Reactor Facilities	2014	31 December 2021
CSA N286	Management System Requirements for Nuclear Facilities	2012	31 December 2021
CSA N286.10	Configuration Management for High-Energy Reactor Facilities	2016	31 December 2021

Commitments under this Licence Condition

The licensee shall provide additional information or documentation, as required, to address the following commitments made during the licensing regulatory review. Those commitments that are tied to a regulatory hold point are also identified in licence condition 15.3 and the *BWRX-300 Licensing Regulatory Actions* document.

Commitment Grouping	Description	Number	Tied to Hold Point
Configuration Management	Updated Configuration Management documentation for BWRX-300 Design Management	1.5.1	Fuel-Out Commissioning
Supply and Contractor Management	Updated OPG Oversight Plans for Procurement	1.7.1	Installation of RB Foundation
Supply and Contractor Management	Updated OPG Procurement Plans for Long-Lead Items	1.7.2	Installation of RB Foundation
Supply and Contractor Management	Specifications for Long-Lead Items Important to Safety	1.7.3	Installation of RB Foundation

MANAGEMENT SYSTEM

Licensee Documents that Require Notification of Change

The following document(s) require written notification of change:

Document Title	Document #	Prior Notification
Nuclear Safety Policy	N-POL-0001	No
Nuclear Management System	N-CHAR-AS-0002	Yes
Nuclear Management System Administration	N-PROG-AS-0001	No
Nuclear Management Systems Organization	N-STD-AS-0020	No
Information Management	OPG-PROG-0001	No
Human Performance	N-PROG-AS-0002	No
Performance Improvement	N-PROG-RA-0003	No
Independent Assessment	N-PROG-RA-0010	No
Items and Services Management	OPG-PROG-0009	No
Project Management	OPG-PROG-0039	No

The licensee shall ensure that the management system meets the requirements of CSA N286 throughout the life cycle of the nuclear facility.

The top tier document of the DNNP management system is the charter N-CHAR-AS-0002 – *Nuclear Management System,* which describes the programs and processes which establish OPG's overall Nuclear Management System.

OPG's accountabilities for project management and oversight of the selected contracted entities are described in OPG-PROG-0039 – *Project Management*. This program sets out the principles and requirements for planning, organizing, and managing resources to ensure the safe, consistent, effective execution and completion of all projects within OPG. Safety and required quality shall be the overriding priority and will not be compromised for cost or schedule. Project Integration Management involves the development of a Project Charter and Project Management Plan (PMP). The PMP provides the project team and interfacing organizations a common

understanding of the scope, assumptions, constraints, risks, and resources, and defines how project integration management will occur as processes interact.

Although the selected Integrated Project Delivery (IPD) model has OPG partner with contract companies to perform certain licensed activities, OPG retains the ultimate accountability and responsibility as licensee under the *Nuclear Safety and Control Act* and associated Regulations to ensure that the licensed activities are carried out in accordance with the requirements of the licence. As such, OPG is accountable to the CNSC to provide the required assurances that the health, safety, and security of the public and workers, and the environment are protected, and that this accountability to the CNSC cannot be delegated through contractual arrangements.

Management System Specific Area

The management system documentation shall contain sufficient detail to demonstrate that the described processes stated directly, or by reference, provides the needed direction to comply with the conditions stated in the PRCL and the criteria herein.

Organisation Specific Area

OPG's organisation is defined in N-STD-AS-0020 – *Nuclear Management Systems Organization* and in OPG correspondence "Persons Authorized to Act on Behalf of OPG in Dealings with the CNSC." OPG shall document the organisational structure for safe and reliable conduct of licensed activities, and shall include all positions with responsibilities for the management and control of the licensed activity. OPG shall also document the roles, responsibilities, and functions of the units and sub-units of this organisational structure.

Safety Culture Specific Area

Licensees shall ensure that the management of the organization supports the safe conduct of nuclear activities. The licensee shall ensure that sound nuclear safety is the overriding priority in all activities performed in support of the nuclear facilities and has clear priority over schedule, cost and production. A safety culture self-assessment methodology is developed following a continuous improvement process, which is governed by N-PROC-AS-0077 – *Nuclear Safety Culture Assessment*.

The licensee's approach to worker safety is governed by OPG-PROG-0005 – *Environment Health and Safety Managed Systems*, which defines the overall process for managing safety and the responsibilities of the parties, specifically at the corporate level.

Design Management

Paragraph 5(*g*) of the *Class I Nuclear Facilities Regulations* require that a licence application for a licence to construct contain the proposed quality assurance program for the design of the nuclear facility. CNSC staff recognise that the design management program will continue to

evolve as nuclear activities progress, and that the control of design aspects at the construction stage will be managed through implementation of OPG-PROG-MP-0009 – *Design Management*.

Recommendations and Guidance:

The management system should be used to promote and support a healthy safety culture. The CSNC recognises the following characteristics that form the framework for a healthy safety culture:

- Safety is a clearly recognised value;
- Accountability for safety is clear;
- Safety is integrated into all activities;
- A safety leadership process exists; and
- Safety culture is learning-driven.

Additional information can be found in CNSC regulatory document REGDOC-2.1.1 – *Management System*.

2 SCA – HUMAN PERFORMANCE MANAGEMENT

2.1 Human Performance Program

Licence Condition:

The licensee shall implement and maintain a human performance management system.

Preamble:

In accordance with REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility (version 2)*, certain aspects of human performance management are applicable at the construction stage.

Human performance relates to measures implemented that are intended to reduce the likelihood of human error in work activities. It refers to the outcome of human behaviour, functions, and actions in a specified environment, and reflects the ability of workers and management to meet the system's defined performance under the conditions in which the system will be employed.

Human Factors are those that influence human performance as it relates to the safety of a nuclear facility or activity over all design and operations phases. These factors may include the characteristics of the person, the task, equipment, the organisation, environment, and training. The consideration of human factors in issues such as interface design, training, procedures, and organisation and job design may affect the reliability of humans performing tasks under various conditions.

CNSC Regulatory Document REGDOC-2.2.1 – *Human Factors* describes how the CNSC will take human factors into account during its licensing, compliance, and standards-development activities.

As defined by the *General Nuclear Safety and Control Regulations*, "workers" include contractors and temporary employees who perform work that is referred to in the licence. For clarification, CNSC regulatory oversight related to hours of work is for the purpose of nuclear safety, and not for the purpose of worker protection. Worker protection measures are addressed in the Conventional Health and Safety SCA, described in subsection 8.1 – *Conventional Health and Safety Program for Site Construction* of this LCH.

Compliance Verification Criteria:

The licensee shall implement and maintain a human performance management program. Add in CVC based on GNSCR 12(1)(a) and (b).

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
CSA N286	Management System Requirements for Nuclear Facilities	2012	12 October 2021
REGDOC-2.2.1	Human Factors	1	31 December 2021

Commitments under this Licence Condition

The licensee shall provide additional information or documentation, as required, to address the following commitments made during the licensing regulatory review. Those commitments that are tied to a regulatory hold point are also identified in licence condition 15.3 and the *BWRX-300 Licensing Regulatory Actions* document.

Commitment Grouping	Description	Number	Tied to Hold Point
Human Factors Engineering	Staffing Summary Reports	2.1.1	Fuel-Out Commissioning

Licensee Documents that Require Notification of Change

The following documents require written notification of change:

Document Title	Document #	Prior Notification
Nuclear Safety Policy	N-POL-0001	No
Human Performance	N-PROG-AS-0002	No
Procedure Use and Adherence	N-STD-AS-0002	No
Communications	N-STD-OP-0002	No
Self-Check	N-STD-OP-0004	No
Conservative Decision Making	N-STD-OP-0012	No
Second Party Verification	N-STD-RA-0014	No
Pre-Job Brief / Safe Work Plan and Post-Job Debriefing	N-PROC-OP-0005	No

Recommendations and Guidance:

OPERATING PERFORMANCE

The licensee should implement a program that continuously monitors human performance, takes steps to identify human performance weaknesses, improves human performance, and reduces the likelihood of human performance-related causes and root causes of nuclear safety events.

The Human Performance Program should address and integrate the range of human factors that influence human performance, which includes but may not be limited to the following:

- Qualified staff
  - Certification and Training
  - Staffing
  - Fitness for Duty
- The reduction of human error
  - Human Factors in Design
  - Procedures Development
  - Procedural Compliance
  - Work Protection and Work Permit Systems
  - Pre- and Post-Job Briefings
  - Safe work strategies and practices
- Organisational support for safe work activities
  - Human Actions in Safety Analysis
  - Organisational Performance and Safety Culture
- Continuous improvement of human performance.

Additional guidance is provided in CNSC Regulatory Document REGDOC-2.5.1 – *General Design Considerations: Human Factors*.

The licensee should incorporate the management of worker fatigue and drug and alcohol use into the human performance program for workers. Additional guidance can be found in the following CNSC Regulatory Documents, which set out requirements and guidance for managing the fitness for duty for workers:

- REGDOC-2.2.4 – *Fitness for Duty, Volume I: Managing Worker Fatigue*
- REGDOC-2.2.4 – *Fitness for Duty, Volume II: Managing Drug and Alcohol Use*

The licensee should use the results of staffing assessments to implement and maintain a program to develop a minimum shift complement for the BWRX-300, in accordance with the requirements of REGDOC-2.2.5 – *Minimum Shift Complement*. CNSC staff expect that the licensee will provide an overview of its minimum shift complement for the BWRX-300 in a potential future licence to operate application.

2.2 Training and Qualification Program

Licence Condition:

The licensee shall implement and maintain a training program.

Preamble:

In accordance with REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility (version 2)*, certain aspects of human performance management are applicable at the construction stage.

Paragraphs 5(*l*) and 5(*m*) of the *Class I Nuclear Facilities Regulations* require that an application for a licence to construct contain, respectively, "[…] *the proposed program and schedule for recruiting, training, and qualifying workers in respect of the operation and maintenance of the nuclear facility*," and "*a description of any proposed full-scope training simulator for the nuclear facility*."

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-2.2.2	Personnel Training	2	31 December 2021

As defined by the *General Nuclear Safety and Control Regulations*, workers include contractors and temporary employees who perform work that is referred to in the licence. Training requirements apply equally to these types of workers as to the licensee's own employees.

To ensure that all workers are qualified to perform the duties and tasks required of their position, the licensee shall implement and maintain initial and continuing training programs for all workers in accordance with CNSC regulatory document REGDOC-2.2.2 – *Personnel Training*. This shall also include licensee personnel exercising and oversight function within the IPD model.

All training programs related to workers in positions, where the consequence of human error poses a risk to the environment, the health and safety of persons, or to the security of the nuclear facilities and licensed activities, shall be evaluated against the criteria for a systematic approach to training.

OPG program document N-PROG-TR-0005 – *Training* describes the controls implemented to ensure workers are trained and assessed to confirm they have acquired the knowledge, skills, and competencies to perform their work assignments. These controls include:

- The identification and definitions of qualifications and competencies required for each task, including site-specific requirements;
- The verification of personnel qualifications and competencies against defined qualification and competency requirements, prior to permitting personnel to perform work on the site; and
- The documentation and maintenance of personnel qualification and competency records.

The licensee shall implement and maintain an overall training policy, including initial and continuing training sub-programs for all workers. The program shall be based on long-term qualifications and competencies required for job performance, as well as training goals that acknowledge the critical role of safety.

The licensee shall, in preparation for the authorisation or certification of personnel employed in designated positions, provide the information specified in subsection 4.2.3, *Personnel Certification*, of REGDOC-1.1.2. This information includes:

- A reference to, or summary of, the roles and responsibilities of personnel employed as part of a minimum shift complement.
- A reference to, or summary of, the roles and responsibilities of personnel employed in positions immediately relevant to safety. This shall include, but is not limited to, safety-sensitive and safety-critical positions.
- A reference to, or summary of, the extent of human intervention in operations under all plant states and conditions, including the potential impact of human actions and decisions on the safety of workers, the public, and the environment.
- An overview of any proposed simulator facility or system, and the manner in which this simulator facility or system will be used to support personnel training.
- An overview of the timeline for implementation of the programs relevant to the selection, training, and qualification of reactor operators and, where applicable, supervisory staff.

Commitments under this Licence Condition

The licensee shall provide additional information or documentation, as required, to address the following commitments made during the licensing regulatory review. Those commitments that are tied to a regulatory hold point are also identified in licence condition 15.3 and the *BWRX-300 Licensing Regulatory Actions* document.

Commitment Grouping	Description	Number	Tied to Hold Point
Training and Qualification	Provision of the Program to Train and Qualify Reactor Workers	2.1.2	Fuel-Out Commissioning

OPERATING PERFORMANCE

Licensee Documents that Require Notification of Change

The following documents require written notification of change:

Document Title	Document #	Prior Notification
Training	N-PROG-TR-0005	No

Recommendations and Guidance:

The licensee should implement the programs in support of the qualification and certification of personnel working at the facility that have a direct impact on nuclear safety. These programs, including certification examination and requalification testing, should be designed in accordance with the requirements of CNSC Regulatory Document REGDOC-2.2.2 – *Personnel Training (version 2)* and REGDOC-2.2.3 – *Personnel Certification, Volume III: Certification of Reactor Facility Workers (version 2)*. Personnel certification requirements are not applicable at this stage, but CNSC staff expect the associated licensee programs to be designed and submitted for review with an application for a licence to operate.

3 SCA – OPERATING PERFORMANCE

3.1 Conduct of Licensed Activities

The Safety and Control Area "Operating Performance" includes an overall review of the conduct of the licensed activities and the activities that enable effective performance.

Licence Condition:

The licensee shall implement and maintain an operations program.

Preamble:

Paragraph 3(1)(b) of the *General Nuclear Safety and Control Regulations* require that an application for a licence for an application shall contain, in addition to other information, a description of the "*activity to be licensed and its purpose*."

The *Class I Nuclear Facilities Regulations* require that a licence application contain the measures that will be taken to prevent or mitigate the effects on the environment and the health and safety of persons that may result from the activity to be licensed.

As described in Part IV of the PRCL, the licence authorises the licensee to construct a single BWRX-300, at the Darlington New Nuclear site. This site is further described in OPG document NK054-DRAW-01210-00007 – *OPG New Nuclear at Darlington Survey Drawing*.

Activities include:

- Completion of any remaining site preparation activities.
- The construction of a single BWRX-300 powerblock unit, which includes the structures, systems, and components (SSC) associated with the reactor building, the control building, the turbine building, the radioactive waste building, and their associated auxiliary structures.
- The construction of supporting structures for up to four BWRX-300 units, including condenser cooling water structures.
- The conduct of commissioning of systems prior to loading nuclear fuel into the reactor (known as "Phase A commissioning" or 'fuel-out commissioning', as described in REGDOC-2.3.1 – *Conduct of Licensed Activities: Construction and Commissioning Programs*).
- Construction of flood protection and erosion control measures commensurate with construction of the powerblock and supporting structures.

Compliance Verification Criteria:

The licensee shall implement and maintain an operations program. This program shall consist of, at a minimum, the safe operating envelope, a set of operating policies and principles, and accident management procedures or guides for design-basis and beyond design-basis accidents (including overall strategies for recovery). These programs shall comply with the requirements set out in the following:

- CNSC Regulatory Document REGDOC-2.3.1 – *Conduct of Licensed Activities: Construction and Commissioning Programs* (Version 1)
- CNSC Regulatory Document REGDOC-2.3.2 – *Accident Management* (Version 2)
- CSA Standard N290.15 – *Requirements for the Safe Operating Envelope of Nuclear Power Plants* (2019 edition).

For greater clarity, requirements for the safe operating envelope and accident management programs specific to the DNNP are discussed below.

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-2.3.1	Conduct of Licensed Activities: Construction and Commissioning Programs	1	31 December 2021
REGDOC-2.3.2	Accident Management	2	31 December 2021
REGDOC-2.6.3	Ageing Management	1	31 December 2021
CSA N290.15	Requirements for the Safe Operating Envelope of Nuclear Power Plants	2019	31 December 2021

This licence does not authorise the licensee to possess nuclear materials, for purposes of operation of the nuclear facility.

Safe Operating Envelope

The Safe Operating Envelope (SOE) is defined in CSA standard N290.15 – *Requirements for the Safe Operating Envelope for Nuclear Power Plants* as the "set of limits and conditions within which the nuclear generating station must be operated, to ensure compliance with the safety analysis upon which the reactor operation is licensed and which can be monitored by, or on behalf of, the operator and can be controlled by the operator." The SOE itself consists of a number of parameters:

- Safe operating limits;

- Conditions of operability;
- Actions and action times; and
- Surveillances.

The safe operating limits are derived from the safety analysis limits. The licensee shall continue to develop its SOE program for the DNNP to support compliance with CSA N290.15 and its associated references for the Licence to Operate phase.

Accident Management

Accident management provisions are established to ensure effective defences against radiological hazards resulting from design-basis accidents (DBA) and beyond design-basis accidents (BDBA). The fundamental premise underlying accident management is that the licensee has established and maintained overlapping measures for accident prevent and, should an accident occur, is able to:

- Prevent the escalation of the accident.
- Mitigate the consequences of the accident.
- Achieve a long-term safe stable state after the accident.

The licensee shall continue to develop and implement operational procedures for BWRX-300 reactor operation in all states analysed within the design basis, including abnormal and emergency states. The licensee shall include such operational procedures in an application for a licence to operate.

Operational procedures ensure that the operation of the facility can be returned to a safe and controlled state should the operation deviate from normal conditions. The licensee shall ensure that all abnormal operational scenarios analysed in the design basis are accounted for in operational procedures with the purpose of mitigating situations that may arise which cause a deviation from the expected state.

In addition to the operational guidance for abnormal and emergency states, the licensee shall continue to develop and implement a severe accident management program for the BWRX-300 to address residual risks posed by severe accidents.

Other Requirements

All work-related tasks shall be supported by procedures that are fit for purpose and are used appropriately to minimise the potential for human error. Additionally, the licensee shall implement and maintain a set of technical basis documents that describe the design basis for chemistry control.

Licensee Documents that Require Notification of Change

The following document(s) require written notification of change:

Document Title	Document #	Prior Notification
Conservative Decision-Making	N-STD-OP-0036	No
Operating Experience Process	N-PROC-RA-0035	No
Processing Station Conditions Records	N-PROC-RA-0022	No
Performance Improvement	N-PROG-RA-0003	No
Conduct of Maintenance	N-PROG-MA-0004	No

Recommendations and Guidance:

None.

3.2 Reporting for Site Construction

Licence Condition:

The licensee shall notify and report in accordance with the periods and requirements of CNSC Regulatory Document REGDOC-3.1.1 – Reporting Requirements for Nuclear Power Plants.

Preamble:

CNSC regulatory document REGDOC-3.1.1 – *Reporting Requirements for Nuclear Power Plants*, version 2, has comprehensive reporting requirements for all nuclear power plants. It describes information that the CNSC requires to evaluate the performance of the nuclear power plants it regulates. This document is complementary to the reporting requirements in the *Nuclear Safety and Control Act* and the associated regulations, as well as to the additional reporting that may be required by specific projects and activities.

Based on the risk-informed approach to implementing regulatory requirements, only specific sections of REGDOC-3.1.1 are applicable for the LTC.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-3.1.1	Reporting Requirements for Nuclear Power Plants (Sections 2[1], 4.2, 4.3, 4.5, 5, and Appendix A)	2	31 December 2021

The licensee shall notify and report in accordance with the specific sections of REGDOC-3.1.1 mentioned above.

Scheduled Reports

The scheduled reporting requirements under section 3 of REGDOC-3.1.1 are not applicable at the construction stage of the project.

As required by subsection 4.2 of REGDOC-3.1.1, OPG shall provide CNSC staff with an updated probabilistic safety assessment (PSA) for the DNNP within five years of the current

[1] The licensee shall provide reports as described in section 2 of REGDOC-3.1.1 – *Reporting Requirements for Nuclear Power Plants*, with the exception of items (9) and (10).

PSA at minimum, or whenever required by CNSC staff. This requirement is further discussed in the *Probabilistic Safety Assessment* CVC of LC 4.1, *Safety Analysis Program*.

Event Reports and Notifications

Where applicable, OPG shall make Preliminary and Detailed Reports in accordance with the requirements of section 5 of REGDOC-3.1.1.

These events shall be assessed and reported per the Event Notifications criteria specified in Appendix A of REGDOC-3.1.1, and as clarified in CNSC document "*Interpretation of REGDOC-3.1.1 Reporting Requirements for Nuclear Power Plants*," provided in CNSC e-Doc 4525925.

OPG program document N-PROG-RA-0002 – *Conduct of Regulatory Affairs* describes OPG's controls for managing regulatory reporting to ensure the CNSC, and other regulatory agencies as appropriate) are made aware of adverse situations or events that may occur during the construction phase.

It is the CNSC's expectation that all adverse events, both reportable and non-reportable, are investigated in accordance with OPG document N-PROG-RA-0003, and actions will be taken to correct the problem and minimise or prevent recurrence. On an annual basis, all reported events are expected to be included in the annual report of the licensed activities. For greater clarity, adverse events apply to all licensed activities, including those activities carried out by contractors operating under the IPD model.

It is expected that contractors carrying out licensed activities on behalf of OPG will develop their own reporting protocol to OPG, that will be reviewed by OPG for acceptance.

Semi-Annual Report for Site Construction

The licensee shall submit a report on a semi-annual (i.e., twice per calendar year) basis to CNSC staff. This report is intended to assist the CNSC in the collection of information to ensure that site construction activities are being conducted in a manner that protects both the health and safety of persons and the environment. In addition, the report assists the CNSC in the collection of information regarding detailed site investigations and analyses that will be conducted during the construction phase to confirm the characteristics of the site.

The deadline to submit the report will be on the first working day of each new semi-annual period, starting in January, throughout the licensing period. This report shall include information from the previous reporting period, on a recurrent basis, including but not limited to the following information:

- Site preparation activities completed;
- Principal site construction activities completed;
- Environmental monitoring program results;

OPERATING PERFORMANCE

- Environmental assessment follow-up program results;
- Implementation status of commitments made during the Joint Review Panel process;
- Detailed site investigation program results;
- A summary of reportable events and actions taken to prevent recurrence;
- A summary of changes to the organisation, programs, procedures, and other associated documents;
- A summary of permits or authorisations applied for, or obtained from, other (i.e., non-CNSC) regulatory agencies;
- A summary of public information initiatives completed;
- An updated project schedule; and
- A description of other supporting activities.

The following document(s) require written notification of change:

Document Title	Document #	Prior Notification
Written Reporting to Regulatory Agencies	N-PROC-RA-0005	No
Preliminary Event Notifications	N-PROC-RA-0020	No

Recommendations and Guidance:

To ensure consistency of reporting across all Canadian nuclear power plants, CNSC staff have prepared a document (e-Doc 4525925) that provides additional clarification and interpretation of the requirements of REGDOC-3.1.1. This list was developed in consultation with industry and should be used as guidance, as appropriate.

The Commission approved version 3 of REGDOC-3.1.1 in February 2024 (Record of Decision e-Doc 7227922). OPG will be requested to provide a gap assessment and a plan for the implementation of version 3 of REGDOC-3.1.1.

3.3 Construction and Commissioning Program

Licence Condition:

The licensee shall implement a construction and commissioning program.

Preamble:

Section 5 of the *Class I Nuclear Facilities Regulations* requires that a licence to construct application for a Class IA nuclear facility contain a description of the proposed construction program, including its schedule.

CNSC regulatory document REGDOC-2.3.1 – *Conduct of Licensed Activities: Construction and Commissioning Programs* describes CNSC requirements and guidance for the construction and commissioning of facilities that use nuclear reactors. Part A of this REGDOC identifies the safety-significant construction activities to be considered, verified, and reviewed to ensure the quality and safety of a new reactor facility. Part B of this REGDOC identifies requirements and guidance to ensure that commissioning activities meet applicable codes, standards, and design requirements to ensure the reactor facility is capable of operating safely and reliably over its design lifetime.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-2.3.1	Conduct of Licensed Activities: Construction and Commissioning Programs	1	31 December 2021

Commitments under this Licence Condition

The licensee shall provide additional information or documentation, as required, to address the following commitments made during the licensing regulatory review. Those commitments that are tied to a regulatory hold point are also identified in licence condition 15.3 and the *BWRX-300 Licensing Regulatory Actions* document.

Commitment Grouping	Description	Number	Tied to Hold Point
Construction Plans	Maintenance, Surveillance, Inspection, and Testing Activities	3.3.1	Installation of RB Foundation

OPERATING PERFORMANCE

Commitment Grouping	Description	Number	Tied to Hold Point
	for SSCs during Construction and Commissioning		

Licensee Documents that Require Notification of Change

The following document(s) require written notification of change:

Document Title	Document #	Prior Notification
Darlington New Nuclear Project Construction Plan	NK054-PLAN-01210-00107	No
Darlington New Nuclear Project Turnover and Commissioning Program Management Plan	NK054-PLAN-01210-00100 (Sheet 19)	No

Recommendations and Guidance:

None.

4 SCA – SAFETY ANALYSIS

4.1 Safety Analysis Program

The Safety and Control Area "Safety Analysis" covers the maintenance of the safety analysis that supports the overall safety case for the facility. Safety analysis is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or facility, and considers the effectiveness of preventative measures and strategies in reducing the effects of such hazards.

Licence Condition:

The licensee shall implement and maintain a safety analysis program.

Preamble:

The *General Nuclear Safety and Control Regulations* require that a licence application contain a description and the results of any analyses performed. Further, the *Class I Nuclear Facilities Regulations* require that an application for a licence to construct contain a preliminary safety analysis report that demonstrates the adequacy of the design of the nuclear facility. A safety analysis program for a reactor facility includes a hazards assessment, a deterministic safety assessment, and a probabilistic safety assessment.

A deterministic safety analysis (DSA) evaluates the nuclear power plant's responses to events by using predetermined rules and assumptions (i.e., conservative or best-estimate methods). The objectives of a DSA are stated in CNSC regulatory document REGDOC-2.4.1 – *Deterministic Safety Analysis*. A DSA allows for the prediction of the extent of potential loads, such as temperatures and pressures, on reactor systems and structures in assumed accident scenarios.

A probabilistic safety assessment (PSA) is a comprehensive and integrated assessment of the safety of the nuclear power plant. The PSA considers the probability, the progression, and the consequences of equipment failures or transient conditions to derive numerical estimates of the facility design.

The PSA assessment is most useful for ensuring the safety of a nuclear power plant in relation to postulated initiating events that can be caused by random component failure and human errors, as well as internal and external hazards. It can be used in conjunction with other tools and techniques to assess the safety of a nuclear power plant. The objectives of the PSA are stated in CNSC regulatory document REGDOC-2.4.2 – *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants*.

CSA standard N286.7 – *Quality Assurance of Analytical, Scientific, and Design Computer Programs for Nuclear Power Plants* provides the specific requirements related to the development, modification, maintenance, and use of computer programs used in analytical, scientific, and design applications. These requirements apply to the design, development,

modification, and use of computer programs that are used in analytical, scientific, and design applications at nuclear power plants.

Compliance Verification Criteria:

The licensee shall implement and maintain programs for the development and modifications of safety analyses for structures, systems, and components (SSC). These programs shall comply with the requirements set out in:

- CNSC regulatory document REGDOC-2.4.1 – *Deterministic Safety Analysis*
- CNSC regulatory document REGDOC-2.4.2 – *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants*
- CNSC regulatory document REGDOC-2.4.3 – *Nuclear Criticality Safety*
- CSA standard N286.7 – *Quality Assurance of Analytical, Scientific, and Design Computer Programs for Nuclear Power Plants*.

OPG has indicated compliance with these REGDOCs, and with CSA N286.7, as documented in revision 2 of NK054-REP-01210-00137 – *DNNP Licence to Construct Regulatory Documents, Codes, and Standards* (e-Doc 7164723).

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-2.3.2	Accident Management	2	31 December 2021
REGDOC-2.4.1	Deterministic Safety Analysis	1	31 December 2021
REGDOC-2.4.2	Probabilistic Safety Assessment (PSA) for Reactor Facilities	2	31 December 2021
REGDOC-2.4.3	Nuclear Criticality Safety	1.1	31 December 2021
REGDOC-2.6.1	Reliability Programs for Nuclear Power Plants	1	31 December 2021
CSA N286.7	Quality Assurance of Analytical, Scientific, and Design Computer Programs	2016 (R2021)	31 December 2021
CSA N290.11	Requirements for Reactor Heat Removal Capability During Outages of Nuclear Power Plants	2021	31 December 2021

SAFETY ANALYSIS

Document Number	Document Title	Version	Effective Date
CSA N290.14	Qualification of Digital Hardware and Software for Use in Instrumentation and Control Applications for Nuclear Power Plants	2015	31 December 2021

The licensee shall demonstrate compliance of the computer programs used in analytical, scientific, and design applications used to support the design of reactor systems, in accordance with CSA N286.7. OPG document NK054-PLAN-01210-00100 (Sheet 4) – *Darlington New Nuclear Project Engineering Program Management Plan* controls the use and qualification of design software for safety analysis purposes, in accordance with CSA N286.7.

Commitments under this Licence Condition

The licensee shall provide additional information or documentation, as required, to address the following commitments made during the licensing regulatory review. Those commitments that are tied to a regulatory hold point are also identified in licence condition 15.3 and the *BWRX-300 Licensing Regulatory Actions* document.

Commitment Grouping	Description	Number	Tied to Hold Point
Hazard Analysis	Updated Seismic Hazard Assessments	4.1.1	Installation of RB Foundation
Hazard Analysis	Updated Wind Hazard Assessment	4.1.2	Installation of RB Foundation
Hazard Analysis	Updated Flood Hazard Assessment	4.1.3	Installation of RB Foundation
Hazard Analysis	Provide Results of Engineered Backfill Verification and Testing to Demonstrate Backfill Performance	4.1.4	Installation of RB Foundation
Probabilistic Safety Assessment	Probabilistic Safety Assessment for the “Standard Plant”	4.2.1	Installation of RB Foundation
Deterministic Safety Assessment	Deterministic Safety Assessment for the “Standard Plant”	4.3.1	Installation of RB Foundation

SAFETY ANALYSIS

Commitment Grouping	Description	Number	Tied to Hold Point
Deterministic Safety Assessment	Experimental Data that Supports TRACG Code Validation for the BWRX-300 Reactor Design	4.3.2	Installation of RB Foundation
Deterministic Safety Assessment	Information Supporting the Analysis of Design Extension Conditions leading to Core Damage	4.3.3	Installation of RB Foundation
Deterministic Safety Assessment	Analyses and Assessments Supporting the Considerations in the CNSC-USNRC *Joint Report on GE Hitachi's Containment Evaluation Method*	4.3.4	Installation of RB Foundation
Severe Accident Analysis	Information Supporting the Assessment of Severe Accidents as per REGDOC-1.1.2, REGDOC-2.4.1, and REGDOC-2.5.2.	4.4.1	Installation of RB Foundation

Licensee Documents that Require Notification of Change

The following document(s) require written notification of change:

Document Title	Document #	Prior Notification
Reactor Safety Program	N-PROG-MP-0014	No
Software	N-PROG-MP-0006	No
Safety Analysis Basis and Safety Report	N-PROC-MP-0086	No
Beyond Design Basis Accident Management	N-STD-MP-0019	No
Preparation, Maintenance, and Application of Probabilistic Safety Assessment	N-STD-RA-0034	No
Darlington New Nuclear Project Engineering Program Management Plan	NK054-PLAN-01210-00100 (Sheet 4)	No

SAFETY ANALYSIS

Document Title	Document #	Prior Notification
Darlington New Nuclear Project (DNNP) Hazards Analysis Methodology	NK054-REP-01210-00144	Yes
BWRX-300 Probabilistic Safety Assessment Methodology	NK054-REP-01210-00143	Yes

Safety Analysis is governed under OPG program N-PROG-MP-0014 – *Reactor Safety Program*. Safety analysis work shall confirm to the requirements of REGDOC-1.1.2 and associated regulatory documents.

Probabilistic Safety Assessment

The licensee shall conduct and maintain a probabilistic safety assessment in compliance with REGDOC-2.4.2, including relevant hazards analyses, and documented in the *Preliminary Safety Analysis Report*.

Recognising that safety analysis is an iterative process, OPG has committed to update safety analyses for postulated initiating events (PIE) and other applicable event sequences and provide these analyses for CNSC staff review once available.

OPG shall continue to provide CNSC staff, on a quarterly basis, a list of changes or modifications made to safety analysis or design documentation.

Deterministic Safety Analysis

The licensee shall conduct and maintain a deterministic safety analysis, as documented in the *Preliminary Safety Analysis Report*, as well as in updates to relevant safety assessments for SSCs important to nuclear safety. This program shall be in compliance with REGDOC-2.4.1.

The REGDOC includes requirements associated with the lessons learned from the Fukushima nuclear events.

Additional Requirements

CSA standard N293 – *Fire Protection for Nuclear Power Plants* contains specific requirements for the deterministic analysis related to fire protection. CNSC staff review the fire safety assessment to verify that the licensee employs appropriate assumptions, uses validated models, applies adequate scope, and demonstrates that results are within the design acceptance criteria. Licence condition 10.2 provides version control requirements for CSA N293.

Criticality Safety

CNSC regulatory document REGDOC-2.4.3 – *Nuclear Criticality Safety* sets out and clarifies the minimum physical constraints and limits on certain fissionable materials to ensure nuclear criticality safety during the construction, operation, or decommissioning of a reactor facility.

The licensee shall implement and maintain a criticality safety analysis program for out-of-core criticality events or accident scenarios. This analysis shall be in compliance with the requirements in subsection 12.8, *Nuclear Criticality Safety Program*, of regulatory document REGDOC-2.4.3 – *Nuclear Criticality Safety*.

Recommendations and Guidance:

Detailed methodologies for the conduct of probabilistic safety assessments can be found in the following technical documents:

- CSA standard N290.17 – *Probabilistic Safety Assessment for Nuclear Power Plants (2023 edition)*
- IAEA SSG-3 – *Development and Application of Level 1 Probabilistic Safety Assessments for Nuclear Power Plants*
- IAEA SSG-4 – *Development and Application of Level 2 Probabilistic Safety Assessments for Nuclear Power Plants*
- ANSI/ASME/ANS RA-S-1.1 – *Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications (2022 edition)*.

Updates to safety analyses, including the deterministic safety analysis, should contain a revision summary sheet highlighting the key differences between the existing and updated analyses. As a good practice, the revision summary should include:

- A summary of key differences between the two versions, such as:
  - Changes to any acceptance criteria
  - Changes in the characterisation of events
  - Changes in assumptions used in the analyses
  - Changes in methodology, or in elements of a methodology
  - Changes in plant models
  - Changes in the use of computer codes and embedded models, or
  - Changes in safety margins
- A discussion on the rationale for updating the analysis, and for updating any of the models, assumptions, initial conditions, or boundary conditions.
- A discussion on the significance of the changes, as well as their justification.
- A discussion on whether any significant changes in results may affect the conclusions of the analysis for the design, operational, or emergency safety requirements for a situation or event.

- A discussion of the impact on operating and safety margins.

When the deterministic safety analysis methodology is modified as a result of improved knowledge, or to address emerging issues, the licensee should assess the impact of the modification on the operating limits, as well as on procedural and administrative rules.

The licensee should not credit results obtained with a modified safety analysis methodology to relax operating conditions or change safety margins, until the modification of the methodology has been reviewed by CNSC staff. Should CNSC staff indicate that the modified methodology is appropriate, the licensee shall continue to fulfill any other requirements or criteria associated with the changes to the operating conditions or safety margins, as documented under other licence conditions. General criteria that CNSC staff will consider when reviewing such methodologies are provided in Appendix A.4.

CNSC staff will refer to the applicable industry verification and validation processes and practices, in addition to industry standards, related to computer codes and software to support plant design and safe operation.

5 SCA – PHYSICAL DESIGN

5.1 Design Program

The Safety and Control Area "Physical Design" relates to activities that impact on the ability of systems, structures, and components to meet and maintain their design basis, given new information arising over time, and taking changes in the external environment into account.

Licence Condition:

The licensee shall implement and maintain a design program.

Preamble:

The *Class I Nuclear Facilities Regulations* require that a licence application contain a description of the site of the activity to be licensed, including the location of any exclusion zone and any structures within that zone. In addition, the application contains plans showing the location, perimeter, areas, structures, and systems of the nuclear facility.

A design program ensures that the plant design is managed using a well-defined systematic approach. Implementing and maintaining a design program confirms that design and installation of SSCs important to safety, as well as any subsequent modifications, continue to meet their design bases given new information arising over time and taking changes in the external environment into account. It also confirms that SSCs continue to be able to perform their safety functions under all plant states.

A design program should be composed of elements that consider topics including, but not limited to: pressure boundary design, civil structure design, seismic design, mechanical design, fuel design, core nuclear design, core thermal-hydraulic design, safety system design, fire protection design, electrical power system design, as well as instrumentation and control system design.

A design program shall also cover conventional SSCs (i.e., those not identified as important to nuclear safety). Those SSCs shall meet minimum design and construction requirements for conventional SSCs.

Compliance Verification Criteria:

The licensee shall ensure that all SSCs important to safety are designed to perform their required functions under all plant states for which the system must remain available. The licensee shall ensure that the design of plant systems, and any modification made to these systems, are in accordance with established DNNP engineering change control processes and CSA standards.

As per the agreement reached in revision 2 of OPG document NK054-REP-01210-00137 – *DNNP Licence to Construct Codes and Standards*, and CNSC staff's acceptance in a response

letter dated 19 December 2023 (CNSC e-Doc 7189873), a number of design-related codes and standards, conditions, and associated effective dates were established. The "effective date" for these codes, standards, and REGDOCs are the versions in-force, or otherwise agreed-upon between CNSC staff and OPG, as of 31 December 2021. The purpose of this agreement is to ensure consistent and stable design requirements are applied throughout the design and construction phase of the DNNP. This concurrence will remain in place until the end of the construction phase of the project.

The CNSC reserves the right to request implementation of an updated edition, addendum, or update to the agreed-upon codes and standards, should there be a demonstrable safety significance. In such cases, CNSC staff will follow the established implementation process, and request OPG provide an implementation plan and a code-over-code review. The licensee shall provide to the CNSC code-over-code reviews conducted for any subsequent editions, addenda, or updates of the codes and standards that were agreed upon.

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-2.5.2	Design of Reactor Facilities: Nuclear Power Plants	1	31 December 2021
Design Governance			
REGDOC-2.5.1	General Design Considerations: Human Factors	1	31 December 2021
NBCC	National Building Code of Canada	2020	31 December 2021
NFCC	National Fire Code of Canada	2020	31 December 2021
CSA C22.1	Canadian Electrical Code, Part 1: Safety Standard for Electrical Installations	2021	31 December 2021
CSA C22.2	Canadian Electrical Code, Part 2: General Requirement	2021	31 December 2021
USNRC RG 1.26	Quality Group Classifications and Standards for Water-, Steam-, and Radioactive Waste-Containing Components of Nuclear Power Plants	5 (and 6)	31 December 2021

PHYSICAL DESIGN

Document Number	Document Title	Version	Effective Date
USNRC RG 1.143	Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants	2	31 December 2021
Structure Design			
CSA N287.1	General Requirements for Concrete Containment Structures for Nuclear Power Plants	2014 (R2019)	31 December 2021
CSA N287.2	Material Requirements for Concrete Containment Structures for Nuclear Power Plants	2017 (R2022)	31 December 2021
CSA N287.4	Construction, Fabrication, and Installation Requirements for Concrete Containment Structures for Nuclear Power Plants	2019	31 December 2021
CSA N287.5	Examination and Testing Requirements for Concrete Containment Structures for Nuclear Power Plants	2011 (R2016)	31 December 2021
CSA N287.6*	Pre-Operational Proof and Leakage Rate Testing Requirements for Concrete Containment Structures for Nuclear Power Plants	2011 (R2021)	31 December 2021
CSA N287.7	In-Service Examination and Testing Requirements for Concrete Containment Structures for Nuclear Power Plants	2017 (R2022)	31 December 2021
CSA N287.8**	Aging Management for Concrete Containment Structures for Nuclear Power Plants	2015 (R2020)	31 December 2021

PHYSICAL DESIGN

Document Number	Document Title	Version	Effective Date
CSA N289.1	General Requirements for Seismic Design and Qualification of Nuclear Power Plants	2018	31 December 2021
CSA N289.2	Ground Motion Determination for Seismic Qualification of Nuclear Power Plants	2021	31 December 2021
CSA N289.3	Design Procedures for Seismic Qualification of Nuclear Power Plants	2020	31 December 2021
CSA N289.4	Testing Procedures for Seismic qualification of Nuclear Power Plant Structures, Systems, and Components	2012 (R2017)	31 December 2021
CSA N289.5	Seismic Instrumentation Requirements for Nuclear Power Plants and Nuclear Facilities	2012 (R2022)	31 December 2021
CSA N290.14	Qualification of Digital Hardware and Software for Use in Instrumentation and Control Applications for Nuclear Power Plants	2015	31 December 2021
CSA N291	Requirements for Safety Related Structures for Nuclear Power Plants	2019	31 December 2021
ANSI 56.8*	Containment System Leakage Testing Requirements	2020	19 December 2023
USNRC 10 CFR 50 Appendix J*	Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors	N/A	19 December 2023
System Design			
ASME BPVC	Boiler and Pressure Vessel Code	2021	31 December 2021

PHYSICAL DESIGN

Document Number	Document Title	Version	Effective Date
CSA B51	Boiler, Pressure Vessel, and Pressure Piping Code	2019	31 December 2021
CSA N285.0[2]	General Requirements for Pressure-Retaining Systems and Components in CANDU Nuclear Power Plants	2017	31 December 2021
CSA N290.0	General Requirements for Safety Systems of Nuclear Power Plants	2017	31 December 2021
CSA N290.11	Requirements for Reactor Heat Removal Capability During Outage of Nuclear Power Plants	2021	31 December 2021
CSA N290.12	Human Factors in Design for Nuclear Power Plants	2014 (R2019)	31 December 2021
CSA N290.13	Environmental Qualification of Equipment for Nuclear Power Plants	2018	31 December 2021
CSA N293	Fire Protection for Nuclear Power Plants	2012 (R2017)	31 December 2021
CSA N293 S1	Supplement No. 1 to N293-12 – Fire Protection for Nuclear Power Plants (Application to Small Modular Reactors)	2021	31 December 2021
Component Design			
REGDOC-2.6.3	Aging Management	1	31 December 2021

** As specified in CNSC letter to OPG on 19 December 2023 (e-Doc 7189873), the requirements for ageing management from CSA N287.8 shall apply to the BWRX-300 containment structure, as this is also part of the Steel-Plate Composite (SC) Containment Vessel Licensing Topical Report.*

*** As specified in the CNSC letter to OPG on 19 December 2023 (e-Doc 7189873), the requirements for pressure testing of containment from N287.6 and N287.8 have been replaced by the complete set of USNRC requirements for pressure testing of the BWRX-300 SCCV containment.*

[2] *Except where variations from the CSA standard have been reviewed and accepted by the Authority Having Jurisdiction (AHJ).*

PHYSICAL DESIGN

Commitments under this Licence Condition

The licensee shall provide additional information or documentation, as required, to address the following commitments made during the licensing regulatory review. Those commitments that are tied to a regulatory hold point are also identified in licence condition 15.3 and the *BWRX-300 Licensing Regulatory Actions* document.

Commitment Grouping	Description	Number	Tied to Hold Point
Design Principles and Requirements	Updated Information to Demonstrate Safety Objectives and Safety Goals are Met	5.2.1	Installation of RB Foundation
Design Principles and Requirements	Information Demonstrating Radiation Protection Considerations in the Design of the BWRX-300	5.2.2	Installation of RB Foundation
Design Principles and Requirements	Radiation Shielding Design	5.2.3	Installation of RB Foundation
Design Principles and Requirements	Design for Reliability Information and Analyses	5.2.4	Installation of RB Foundation
Design Principles and Requirements	Detailed Information about Alternative Approaches: Means of Shutdown	5.2.5	Installation of RB Foundation
Design Principles and Requirements	Identification of Structures, Systems, and Components (SSC) Important to Safety	5.2.6	Installation of RB Foundation
Design Principles and Requirements	Human Factors Engineering Design Support and Evaluation Reports	5.2.7	Installation of RPV
Design Principles and Requirements	Detailed Design Information for BWRX-300 Complementary Design Features	5.2.8	Installation of RB Foundation
Design Principles and Requirements	Detailed Information Documenting the Technical Bases that Inform the Operational Limits and Conditions	5.2.9	Fuel-Out Commissioning

PHYSICAL DESIGN

Commitment Grouping	Description	Number	Tied to Hold Point
Structure Design	Detailed Design Information for Civil Structures: Reactor Building and Steel-Composite Structures	5.4.1	Installation of RB Foundation
Structure Design	Detailed Design Information for Civil Structures: Turbine Building	5.4.2	Not Applicable
System Design	Detailed Information on the Isolation Condenser System (ICS) Functionality and Reliability	5.5.1	Installation of RPV
System Design	Detailed Information regarding Containment Design, Pressures, Leak Rate, Isolations	5.5.2	Installation of RB Foundation Installation of RPV
System Design	Detailed System Descriptions and Design Information: Electrical Distribution System	5.5.3	Installation of RB Foundation
System Design	Detailed System Descriptions and Design Information: Instrumentation and Control System	5.5.4	Installation of RPV
System Design	Detailed System Descriptions and Design Information: Main Turbine Equipment (MTE)	5.5.5	Installation of RPV
System Design	Detailed System Descriptions and Design Information: Condensate and Feedwater Systems	5.5.6	Installation of RPV
System Design	Detailed System Descriptions and Design Information: Fuel Handling System and Associated Subsystems	5.5.7	Installation of RPV
System Design	Detailed System Descriptions and Design Information: Liquid and Solid Radioactive Waste Management Systems	5.5.8	Installation of RPV

PHYSICAL DESIGN

Commitment Grouping	Description	Number	Tied to Hold Point
System Design	Detailed System Descriptions and Design Information: Fire Protection System	5.5.9	Installation of RB Foundation
System Design	Updated Fire Protection Assessment Documentation	5.5.x10	Prior to Licensed Activities
System Design	Detailed System Descriptions and Design Information: HVAC Process Auxiliary Systems	5.5.11	Installation of RB Foundation
System Design	Detailed System Descriptions and Design Information: Auxiliary Water Supply Systems	5.5.12	Installation of RPV

Licensee Documents that Require Notification of Change

The following document(s) require written notification of change:

Document Title	Document #	Prior Notification
Project Management	OPG-PROG-0039	No
Darlington New Nuclear Project (DNNP) Engineering Oversight	NK054-PLAN-01210-00035	No

The licensee shall ensure that the ageing management requirements for concrete structures from CSA N287.8 – *Aging Management for Concrete Containment Structures for Nuclear Power Plants* are applied to the BWRX-300 steel-plate concrete-composite containment structure. In addition, the licensee shall ensure that the USNRC requirements for pressure-testing of containment structures are applied in full, in lieu of the requirements from CSA N287.8 and N287.6 – *Pre-Operational Proof and Leakage Rate Testing Requirements for Containment Structures for Nuclear Power Plants*.

For greater clarity, the USNRC requirements for pressure-testing of containment structures are specified in Appendix J, Title 10, Chapter 50 – *Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors*, of the US Code of Federal Regulations (10 CFR 50), and the ANSI-56.8 – *Containment System Leakage Testing Requirements (2020)* standard.

PHYSICAL DESIGN

The licensee shall have sub-program elements that address the design and modification of containment structures and structures important to safety.

Design Basis Management

The licensee shall ensure that plant status changes (such as modifications to the design) are controlled, such that the plant is maintained within the limits prescribed by the design and licensing basis. Aspects of the design are considered safety and control measures if changes to them could:

- Introduce hazards that are different in nature, or greater in probability or consequence, than those considered in the respective probabilistic or deterministic safety analyses; and/or,
- Adversely impact other important safety and control measures, such as those related to operational activities, protection of personnel, emergency preparedness and response, etc.

The licensee shall ensure that changes to those aspects of the design remain within the licensing basis, and shall notify the CNSC when such changes could deviate from the licensing basis. When reviewing such changes, CNSC staff will use the criteria specified in Appendix A.4, and any other criteria necessary to evaluate the change. Changes that are determined to be outside of the licensing basis would require prior written approval by the Commission.

The licensee shall ensure that the design is controlled, and that the plant design is accurately reflected in the safety analysis (refer to LC 4.1 for licensee documents that contain the description of facilities and the safety analysis reports). Where specific reports (e.g., third-party reviews as required by CSA standard N293 – *Fire Protection for Nuclear Power Plants*) are required by standards in the licensing basis, these shall be submitted to the CNSC.

Safety classification for SSCs and site infrastructure shall be submitted and approved by CNSC staff prior to constructing those SSCs and site infrastructure. For greater clarity, this includes code classification for pressure boundary components. Those SSCs that are anticipated to have a nuclear safety function will be classified, designed, and constructed according to relevant requirements.

The design and the design basis can be managed in a risk-informed manner, as described in REGDOC-3.5.3 – *Regulatory Fundamentals* and REGDOC-2.5.2 – *Design of Reactor Facilities*.

Design Sub-Programs

Refer to licence condition 5.3 for compliance verification criteria regarding environmental and structural qualification programs.

The design of structures, systems, and components important to safety shall include consideration for human factors.

PHYSICAL DESIGN

The licensee shall apply the relevant national, provincial, or local building and fire codes, as applicable, to SSCs within the exclusion zone but external to the protected area. The licensee shall demonstrate the appropriate permits have been obtained for SSCs built outside of the protected area.

However, the licensee can also identify SSCs in this area to which it will apply CSA N293 requirements. The licensee shall identify the specific SSCs within the exclusion zone, but external to the protected area, to which it will apply the requirements of CSA N293.

Pressure Boundary Program

Licence condition 5.2 *Pressure Boundary Program* describes the compliance verification criteria for the pressure boundary program, including the pressure boundary design program.

The licensee has applied to the CNSC, as the authority having jurisdiction, for a variance from specific requirements of the CSA N285.0 standard. Should the variance request be approved, the licensee will be required to comply with the proposed alternative pressure boundary program, including any additional conditions of the variance put in place by the AHJ.

Fire Protection Program

As per N-PROG-RA-0012 – *Fire Protection*, the licensee may specify SSCs in the BWRX-300 protected area or exclusion zone to which the requirements of CSA N293 – *Fire Protection for Nuclear Power Plants* are not applied. In this case, the licensee shall document these SSCs and the requirements of the 2020 edition of the *National Building Code of Canada*, as well as the 2020 edition of the *National Fire Code of Canada* shall apply.

The licensee shall develop the Fire Hazard Assessment (FHA) and Fire Safe Shutdown Analysis (FSSA) for the BWRX-300 reactor against the requirements of CSA N293. The licensee shall provide a justification for any non-conformances found, along with development of a plan to implement corrective actions to address identified gaps.

The licensee shall design, build, modify, and otherwise carry out work related to the nuclear facility with the potential to impact protection from fire, in accordance with CSA standard N293 – *Fire Protection for CANDU Nuclear Power Plants* and CSA N293S1. Any changes that have the potential to impact fire protection shall be assessed for compliance with N293 and, if required, an external third-party review shall be performed and the results submitted to the CNSC.

Plant Electrical Power and Instrumentation and Control

The licensee shall ensure the plant's electrical power system includes the safety classification of the systems. Its design shall be in compliance with the *Canadian Electrical Code* and/or additional applicable standards where the *Canadian Electrical Code* is silent (e.g., the *Ontario Electrical Code*)

PHYSICAL DESIGN

The design of the plant electrical system shall be adequate for all modes of operation under steady-state, voltage and frequency excursion, and transient conditions, as confirmed by electrical analysis. The electrical power systems shall be monitored and tested to demonstrate they comply with the design requirements and to verify the operability for AC and DC systems.

The licensee shall ensure that the plant's overall instrumentation and control (I&C) system, as well as the electrical power system, is designed to satisfy the following:

- The safety classification of the I&C system is in compliance with the plant-level system classification and is justified by analysis.
- The systems meet separation requirements between the groups and channels.
- Safety features for enhancing system reliability and integrity (e.g., fail-safe design, redundancy, independence, and testing capability) are identified and implemented in the design.
- The systems are not vulnerable to common-cause failures.
- The I&C and electrical power systems of safety systems meet the requirements of single failure criteria.

The licensee shall demonstrate survivability of I&C systems and components that are critical to the management of beyond-design basis accidents (BDBA), as well as demonstrate the availabilities of power supplies to necessary equipment and associated I&Cs for BDBAs.

The licensee shall design the BWRX-300 instrumentation and control system in accordance with CSA C22.1 – *Canadian Electrical Code Part 1: Safety Standard for Electrical Installations*, CSA C22.2 – *Canadian Electrical Code Part 2: General Requirements*, and other applicable codes and standards.

Configuration Management

The licensee shall ensure configuration management is aligned with the design and safety analysis, and incorporated into purchasing, construction, commissioning, operations, and maintenance documentation. Conformance is to be maintained between design requirements, the physical configuration, and facility configuration information. The licensee shall establish a design authority function with the authority to review, verify, approve, reject, document design changes, and maintain design configuration control.

The licensee shall design, build, modify, and otherwise carry out work related to the nuclear facility with the potential to impact protection from fire, in accordance with CSA standard N293 – *Fire Protection for CANDU Nuclear Power Plants* and CSA N293S1. Any changes that have the potential to impact fire protection shall be assessed for compliance with N293 and, if required, an external third-party review shall be performed and the results submitted to the CNSC.

Ageing Management

The licensee has stated compliance with the 2014 version of CNSC Regulatory Document REGDOC-2.6.3 – *Aging Management* as of 31 December 2021.

The licensee shall incorporate ageing management considerations in the design of plant structures, systems, and components and, where applicable, establish SSC-specific ageing management plans in accordance with REGDOC-2.6.3. These ageing management plans shall include a structured, forward-looking inspection and maintenance schedule, requirements for the monitoring and trending of ageing effects, and any preventative actions necessary to minimise and control ageing degradation of SSCs.

The licensee shall demonstrate ageing management has been and will be considered throughout all lifecycle stages of the reactor, through implementation of the BWRX-300 Reliability, Availability, Maintainability, and Inspectability (RAMI) program.

Recommendations and Guidance:

With regard to the design of the plant, the design basis should be documented and maintained to reflect design changes to ensure adequate configuration management. The design basis should be maintained and updated to reflect new information, operating experience, updates to the safety analyses performed, and any resolution of safety issues or corrections of deficiencies. The impacts of the design changes should be fully assessed, addressed, and accurately reflected in the safety analyses prior to implementation.

The design program should minimise the potential for human error, and promote safe and reliable performance through consideration of human factors in the design of the facility, its systems, and equipment. Recommendations and guidance for consideration of human factors in design are provided in CNSC Regulatory Document REGDOC-2.5.1 – *General Design Considerations: Human Factors*.

5.2 Pressure Boundary Program

Licence Condition:

The licensee shall implement and maintain a pressure boundary program and have in place a formal agreement with an Authorized Inspection Agency.

Preamble:

This licence condition provides regulatory oversight with regard to the licensee's implementation of a pressure boundary program, and holds the licensee responsible for all aspects of pressure boundary registration and inspections.

A pressure boundary program is itself comprised of the many programs, processes, procedures, and associated controls required to establish compliance CSA standard N285.0 – *General Requirements for Pressure-Retaining Systems and Components in CANDU Nuclear Power Plants*. This standard defines the technical requirements for the design, procurement, fabrication, installation, modification, repair, replacement, testing, examination, and inspection of pressure-retaining and containment systems, including their components and supports.

This licence condition also ensures that an Authorised Inspection Agency (AIA) will be retained and subcontracted directly by the licensee. An AIA is an organisation recognised by the CNSC as authorised to register designs and procedures, perform inspections, and carry out other functions and activities defined by CSA N285.0 and its applicable referenced publications (e.g., the CSA standard B51 – *Boiler, Pressure Vessel, and Piping*, and the National Board Inspection Code). The AIA is accredited by the American Society of Mechanical Engineers (ASME), as stipulated by NCA-5121 of the ASME *Boiler and Pressure Vessel Code* (BPVC).

For greater clarity, a pressure boundary is the boundary of any pressure-retaining vessel, system, or component of a nuclear or non-nuclear system, where such vessel, system, or component is registered or eligible for registration.

Compliance Verification Criteria:

The licensee shall implement and maintain a pressure boundary program. This program shall be in compliance with CSA standard N285.0 – *General Requirements for Pressure-Retaining Systems and Components in CANDU Nuclear Power Plants*, except for where licensee-requested variances from the standard have been appropriately documented, justified, and reviewed and approved by CNSC staff.

The licensee has applied to the CNSC, as the authority having jurisdiction, for a variance from specific requirements of the CSA N285.0 standard. Should the variance request be approved, the licensee will be required to comply with the proposed alternative pressure boundary program, including any additional conditions of the variance put in place by the AHJ.

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
CSA N285.0[1]	General Requirements for Pressure-Retaining Systems and Components in CANDU Nuclear Power Plants	2017 (R2022)	31 December 2021
ASME BPVC	Boiler and Pressure Vessel Code	2021	31 December 2021
CSA B51	Boiler, Pressure Vessel, and Piping Code	2019 (R2024)	31 December 2021

[1] *Except where variations from the CSA standard have been reviewed and accepted by the Authority Having Jurisdiction (AHJ).*

Commitments under this Licence Condition

The licensee shall provide additional information or documentation, as required, to address the following commitments made during the licensing regulatory review. Those commitments that are tied to a regulatory hold point are also identified in licence condition 15.3 and the *BWRX-300 Licensing Regulatory Actions* document.

Commitment Grouping	Description	Number	Tied to Hold Point
Design Principles and Requirements	BWRX-300 Pressure Boundary Program and Associated Approvals	5.2.10	Installation of RB Foundation
Design Principles and Requirements	CNSC Approval of BWRX-300 Pressure Boundary Program	5.2.10.1	Installation of RB Foundation
Design Principles and Requirements	CNSC Approval of N285.0 Variance Request	5.2.10.2	Installation of RB Foundation
Design Principles and Requirements	CNSC Acceptance of the Break Exclusion Zone Methodology	5.2.10.3	Installation of RB Foundation
Design Principles and Requirements	Submission of BWRX-300 Code Classification Procedure and PRSC Code Classification	5.2.10.4	Installation of RB Foundation

PHYSICAL DESIGN

When pressure retaining components or systems have been installed, the licensee shall operate and maintain such vessels, boilers, systems, piping, fittings, parts, components, and supports safely and in safe working condition. The licensee shall:

- Follow work plans and procedures, accepted by the AIA, to test, maintain, or alter overpressure protection devices;
- Comply with operating limits specified in certificates, orders, designs, overpressure protection reports, and applicable codes and standards; and
- Have any certified boiler or vessel in operation or use inspected and certified by an authorised inspector, according to an accepted schedule.

Classification, Registration, and Reconciliation Procedures

The licensee shall establish procedures describing the classification, registration, and reconciliation processes, as well as their associated controls, and these processes shall form part of the pressure boundary program for the BWRX-300. The licensee shall provide prior notification of any changes to procedures describing the classification, registration, and reconciliation processes.

Quality Assurance Program

The licensee shall establish and maintain a pressure boundary quality assurance program in compliance with clause 10 of CSA N285.0, except where a variance has been submitted to and approved by CNSC as the authority having jurisdiction.

Classification and Registration of Fire Protection Systems

The licensee shall classify fire protection systems and their associated fittings and components to at least Code Class 6 (as defined in CSA N285.0), designed to ASME B31.1, and register these components. These classification rules shall apply unless the exemption criteria below are met.

The following fittings and components may be exempt from requiring a Canadian Registration Number (CRN), provided they meet the following criteria:

- Fittings and components that are cUL or ULC listed, and are suitable for the expected environmental conditions and maximum pressure; or
- Pressurised cylinders and tubes (e.g., extinguishers, inert gas, and foam tanks) that bear Transport Canada approvals, and are suitable for the expected environmental conditions and maximum pressures; or
- Buried fire protection piping that is in compliance with NFPA 24 – *Standard for the Installation of Private Fire Service Mains and Their Appurtenances*.

Buried fire protection piping that is designed to the ASME piping code may be exempt from ASME pressure testing requirements, if the pressure testing is performed to the requirements of NFPA 24.

The requirements of CSA N285.0 apply for any components in a Code Class that is higher than Code Class 6, unless a variance request has been submitted to and approved by the CNSC as the authority having jurisdiction.

Formal Agreement with an Authorised Inspection Agency

The licensee shall always have in place a formal agreement with an AIA to provide services for the pressure boundaries of the nuclear facility, as defined by CSA N285.0 and its applicable referenced publications. The AIA shall be accredited by ASME as stipulated by NCA-5121 of the ASME *Boiler and Pressure Vessel Code*.

Design registration services for pressure boundaries shall be provided by an AIA legally entitled to register designs under the Province of Ontario's *Provincial Boilers and Pressure Vessels Act* and regulations. Registration of piping systems shall be done by an organisation who is legally entitled to register designs in Ontario.

A copy of the signed Agreement shall be provided to the CNSC. During the licence period, the licensee shall notify the CNSC in writing of any change to the terms and conditions of the Agreement, including its termination.

The licensee shall arrange for the AIA inspectors to have access to all areas and records of the facility, and to the facilities and records of the licensee's pressure boundary contractors and material organisations, as would be necessary for the purposes of performing inspections and other activities required by the standards. AIA inspectors shall be provided with information, reasonably in advance with the notice and time necessary to plan and perform inspections and other activities required by the standards.

For a variance or deviation from the requirements of CSA N285.0, the licensee must first submit the proposed resolution to the AIA for evaluation, and then to the CNSC for consent. As per the agreement with the AIA, the evaluated resolution shall not be implemented without the prior written consent of CNSC staff.

Licensee Documents that Require Notification of Change

The following document(s) require written notification of change:

Document Title	Document #	Prior Notification
Pressure Boundary Program	N-PROG-MP-0004	Yes

PHYSICAL DESIGN

Document Title	Document #	Prior Notification
Design Registration	N-PROC-MP-0082	Yes
BWRX-300 Darlington New Nuclear Project (DNNP): Structures, Systems, and Components Classification Report	NK054-REP-01210-00184	Yes

Recommendations and Guidance:

Additional recommendations and guidance can be found in the following CSA standards and ASME codes:

- CSA N289 Series of standards, which covers seismic qualification;
- CSA B51 – *Boiler, Pressure Vessel, and Piping*;
- ASME *Boiler and Pressure Vessel Code*;
- ASME B31.1 – *Power Piping*;
- ASME B31.3 – *Process Piping Code*; and
- ASME B31.5 – *Refrigeration Piping and Heat Transfer Component Code*.

The AIA, and its authorised inspectors, should be familiar with and capable of applying the CSA N285.0 provisions to perform their activities, as defined by the standard.

5.3 Equipment and Structure Qualification Program

Licence Condition:

The licensee shall implement and maintain an equipment and structure qualification program.

Preamble:

Environmental Qualification (EQ) of components and systems ensures that all required equipment in a nuclear facility are qualified to perform their safety functions if exposed to harsh environmental conditions resulting from credible Design Basis Accidents (DBA), and that this capability is preserved for the life of the plant.

Condition monitoring assesses variables that indicate the physical state of the equipment and assesses its ability to perform the intended function following the period of observation. Environmental monitoring measures environmental stressors such as temperature, radiation, and operational cycling during normal operation conditions.

Seismic Qualification (SQ) ensures that all seismically-credited SSCs important to safety in a nuclear power plant are designed, installed, and maintained to perform their safety function, during and/or after, a design basis earthquake or site design earthquake. SQ also ensures an adequate margin against review level earthquakes.

Compliance Verification Criteria:

The licensee shall implement and maintain environmental and seismic qualification programs. The programs shall be in compliance with CSA standards:

- CSA standard N290.13 – *Environmental Qualification of Equipment for CANDU Nuclear Power Plants*
- CSA standard N289.1 – *General Requirements for Seismic, Design, and Qualification of CANDU Nuclear Power Plants*
- CSA standard N289.2 – *Ground Motion Determination for Seismic Qualification of Nuclear Power Plants*
- CSA N289.3 – *Design Procedures for Seismic Qualification of Nuclear Power Plant Structures, Systems, and Components*
- CSA N289.4 – *Testing Procedures for Seismic Qualification of Nuclear Power Plant Structures, Systems, and Components*
- CSA N289.5 – *Seismic Instrumentation Requirements for Nuclear Power Plants and Nuclear Facilities*

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
CSA N289.1	General Requirements for Seismic, Design, and Qualification of Nuclear Power Plants	2018	31 December 2021
CSA N289.2	Ground Motion Determination for Seismic Qualification of Nuclear Power Plants	2021	31 December 2021
CSA N289.3	Design Procedures for Seismic Qualification of Nuclear Power Plants	2020	31 December 2021
CSA N289.4	Testing Procedures for Seismic Qualification of Nuclear Power Plant Structures, Systems, and Components	2012 (R2017)	31 December 2021
CSA N289.5	Seismic Instrumentation Requirements for Nuclear Power Plants and Nuclear Facilities	2012 (R2022)	31 December 2021
CSA N290.13	Environmental Qualification of Equipment for Nuclear Power Plants	2018	31 December 2021

Commitments under this Licence Condition

The licensee shall provide additional information or documentation, as required, to address the following commitments made during the licensing regulatory review. Those commitments that are tied to a regulatory hold point are also identified in licence condition 15.3 and the *BWRX-300 Licensing Regulatory Actions* document.

Commitment Grouping	Description	Number	Tied to Hold Point
System Design	Demonstration of Implementation of Equipment Environmental Qualification (EQ) in System Design	5.5.13	Installation of RPV

As per the agreement reached in revision 2 of OPG document NK054-REP-01210-00137 – *DNNP Licence to Construct Codes and Standards*, and CNSC staff's acceptance in a response

PHYSICAL DESIGN

letter dated 19 December 2023 (CNSC e-Doc 7189873), a number of design-related codes and standards, conditions, and associated effective dates were established, including CSA N290.13. The purpose of this agreement is to ensure consistent and stable design requirements are applied throughout the design and construction phase of the DNNP. This concurrence will remain in place until the end of the construction phase of the project.

The CNSC reserves the right to request implementation of an updated edition, addendum, or update to the agreed-upon codes and standards, should there be a demonstrable safety significance. In such cases, CNSC staff will follow the established implementation process, and request OPG provide an implementation plan and a code-over-code review. OPG shall provide to the CNSC code-over-code reviews conducted for any subsequent editions, addenda, or updates of the codes and standards that were agreed upon.

Environmental Qualification

In addition to the criteria set out in CSA N290.13, the EQ program shall include a monitoring program consisting of both condition and environmental monitoring, to measure degradation and failures of qualified equipment including cables.

Seismic Qualification

Seismically credited SSCs important to safety in a nuclear facility shall be designed, installed, and maintained to perform their safety function against design basis earthquakes.

Seismic qualification or modification of a seismically qualified SSC would require prior notification and engagement of the CNSC. When reviewing such changes, CNSC staff will use the criteria in Appendix A and any other applicable criteria. Changes outside of the licensing basis would require prior written approval by the Commission.

Licensee Documents that Require Notification of Change

The following document(s) require written notification of change:

Document Title	Document #	Prior Notification
None.		

Recommendations and Guidance:

The processes and procedures related to the EQ program should meet the requirements of recognised industrial standards. In addition to addressing the detailed requirements of CSA N289.1, the licensee's SQ sub-program should:

- Identify the methods for establishing SQ, including code effective dates.
- Identify the SSCs for which evaluation of their capacity beyond the design basis earthquake has been completed.
- Identify the methods used for the beyond design basis earthquake evaluation.
- Include procedural controls for the periodic inspection and maintenance of conditions to ensure SQ of SSCs for the life of the plant.
- Identify the seismic monitoring system and its design and maintenance requirements.
- Include procedural controls for establishing SQ for new and replacement items.

6 SCA – FITNESS FOR SERVICE

In accordance with REGDOC-1.1.2, the Fitness for Service SCA is not applicable at the construction stage of the project. Specific considerations within the Fitness for Service SCA, such as chemistry control or ageing management are included in the Operating Performance or Physical Design SCAs, respectively.

7 SCA – RADIATION PROTECTION

7.1 Radiation Protection Program

The Safety and Control Area "Radiation Protection" covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations*. This program must ensure that contamination and radiation doses are monitored, controlled, and maintained as low as reasonably achievable (ALARA).

Licence Condition:

The licensee shall implement and maintain a radiation protection program.

Preamble:

The *Radiation Protection Regulations* require that the licensee implement a radiation protection program, and also ascertain and record doses for each person who performs any duties in connection with any activity that is authorised by the *Nuclear Safety and Control Act*, or is present at a place where that activity is carried on. This program must ensure that doses to workers do not exceed prescribed dose limits and are kept ALARA, social and economic factors being taken into account.

The regulatory dose limits for persons who carry out activities where they may be occupationally exposed to ionising radiation are explicitly provided in the *Radiation Protection Regulations*.

As described in the Licence to Construct Application, the possession of nuclear fuel or related materials is not authorised for the construction of a BWRX-300 reactor, and as such is not a licensed activity. Consequently, there will be no radiation dose to DNNP workers as a result of licensed activities under the PRCL.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
None.	None.		

Licensee Documents that Require Notification of Change

The following document(s) require written notification of change:

Document Title	Document #	Prior Notification
Darlington New Nuclear Project (DNNP) Health and Safety Plan	NK054-PLAN-01210-00034	No
BWRX-300 Occupational Dose Assessment Report	NK054-REP-03420-00001	No

Doses of radiation received by or committed to workers at the DNNP site during construction activities shall be ascertained, monitored, and controlled below CNSC regulatory dose limits, as required by paragraphs 4(b)(iii) and 5(2)(b) of the *Radiation Protection Regulations*.

For greater clarity, as described in OPG document NK054-PLAN-01210-00034 – *Darlington New Nuclear Project (DNNP) Health and Safety Plan*, DNNP workers are persons not considered nuclear energy workers (NEW), and any doses are expected to originate from either the Darlington Nuclear Generating Station (DNGS) or the Darlington Waste Management Facility (DWMF). Occupational exposures to these workers shall be ascertained following the requirements of the respective facility licences.

The licensee shall report on the doses received by, or committed to, DNNP workers on an ongoing basis, consistent with the commitment identified in NK054-PLAN-01210-00034 and in correspondence NK054-CORR-00531-10691 (CNSC e-Doc 6816500). For greater clarity, OPG shall provide confirmation, on an annual basis, to the CNSC that the estimated incremental dose (i.e., the incremental dose above background) to workers on the DNNP site remain below regulatory dose limits for persons who are not considered NEWs.

OPG shall revise and update NK054-PLAN-01210-00034 commensurate with any newly identified radiological risks on-site, and in accordance with the progression of the construction phase of the DNNP.

OPG has conducted a preliminary occupational dose assessment for workers during the operational phase of the facility, including planned maintenance outages. This assessment is documented in NK054-REP-03420-00001 – *BWRX-300 Occupational Dose Assessment Report*. OPG shall provide CNSC staff with any updated version of this report, including a description of the changes from any previous version, and prior to submission of any application for a licence to operate.

If nuclear substances above exemption quantities, as described in the *Nuclear Substances and Radiation Devices Regulations*, are encountered during construction activities, OPG shall provide notification to CNSC staff in accordance with the requirements of Appendix A of REGDOC-3.1.1 – *Reporting Requirements for Nuclear Power Plants*.

Recommendations and Guidance:

RADIATION PROTECTION

CNSC regulatory documents REGDOC-2.7.1 – *Radiation Protection* and REGDOC-2.7.2 – *Dosimetry Volume 1: Ascertaining Occupational Dose* provide additional information and guidance on how to meet this regulatory requirement.

8 SCA – CONVENTIONAL HEALTH AND SAFETY

8.1 Conventional Health and Safety Program for Site Construction

The Safety and Control Area "Conventional Health and Safety" covers the implementation of a program to manage workplace safety hazards and to protect personnel and equipment.

Licence Condition:

The licensee shall implement and maintain a conventional health and safety program.

Preamble:

The *Class I Nuclear Facilities Regulations* require that a licence application contain the proposed worker health and safety policies and procedures.

Nuclear power plants in Ontario are regulated by the Ontario Ministry of Labour, under the *Ontario Occupational Health and Safety Act* and the *Ontario Labour Relations Act*.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-2.8.1	Conventional Health and Safety	1	31 December 2021

Licensee Documents that Require Notification of Change

The following document(s) require written notification of change:

Document Title	Document #	Prior Notification
Health and Safety Policy	OPG-POL-0001	No
Environment Health and Safety Managed Systems	OPG-PROG-0005	No
Darlington New Nuclear Project (DNNP) Health and Safety Plan	NK054-PLAN-01210-00034	Yes
Hazardous Materials Management	OPG-PROC-0126	No

The licensee maintains the responsibility for safety at its site at all times during the conduct of licensed activities. This responsibility cannot be delegated or contracted to another organisation or entity. The licensee shall ensure that its IPD contract partners and other organisations present on site are informed of and uphold their roles and responsibilities related to conventional health and safety.

Contractors conducting licensed activities on behalf of the licensee are expected to prepare a set of occupational health and safety procedures or instructions to ensure that workers will be protected against health and safety hazards encountered during licensed activities. OPG is expected to review the contractors' health and safety procedures or instructions, and maintain oversight, to ensure the requirements of applicable legislation, industry management practices, and the licensing basis requirements for construction are implemented.

Recommendations and Guidance:

Additional information can be found in CNSC regulatory document REGDOC-2.8.1 – *Conventional Health and Safety*.

9 SCA – ENVIRONMENTAL PROTECTION

9.1 Environmental Protection for Construction

The Safety and Control Area "Environmental Protection" covers programs that identify, control, and monitor all releases of radioactive and hazardous substances and effects on the environment from facilities, or as the result of licensed activities.

Licence Condition:

The licensee shall implement and maintain an environmental protection program.

Preamble:

The *Class I Nuclear Facilities Regulations* set out requirements related to environmental protection that must be met by the applicant.

The *General Nuclear Safety and Control Regulations* require that every licensee take all reasonable precautions to protect the environment and to control the release of nuclear substances or hazardous substances within the site of the licensed activity and into the environment as a result of the licensed activity.

The *Radiation Protection Regulations* prescribe the radiation dose limits for the general public at 1 mSv per calendar year.

CNSC REGDOC-2.9.1 – *Environmental Protection: Environmental Principles, Assessments, and Protection Measures Version 1.2, 2017*, describes the principles an factors that guide the CNSC in regulating the development, production, and use of nuclear energy and the production, possession and use of nuclear substances, prescribed equipment and prescribed information in order to prevent unreasonable risk to the environment in a manner consistent with Canadian environmental policies, acts and regulations, and with Canada's international obligations.

The release of hazardous substances is regulated by the Ontario Ministry of Environment, Conservation and Parks (MECP), and Environment and Climate Change Canada (ECCC) through various acts and regulations, as well as the CNSC.

Compliance Verification Criteria:

The licensee shall implement and maintain an environmental protection program in accordance with the following:

- CNSC REGDOC-2.9.1 – *Environmental Protection Policies, Programs, and Procedures*
- CNSC REGDOC-1.1.1 – *Site Evaluation and Site Preparation for New Reactor Facilities*

- CNSC REGDOC-1.1.2 – *Licence Application Guide: Licence to Construct a Reactor Facility*
- CSA standard N288.4 – *Environmental Monitoring Program at Class I Nuclear Facilities and Uranium Mines and Mills*
- CSA standard N288.5 – *Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills*
- CSA standard N288.6 – *Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills*; and
- CSA standard N288.7 – *Groundwater Protection Programs at Class I Nuclear Facilities and Uranium Mines and Mills*.

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-1.1.1	Site Evaluation and Site Preparation for New Reactor Facilities	1.2	31 December 2021
REGDOC-2.9.1	Environmental Protection: Environmental Principles, Assessments, and Protection Measures Version 1.2	2017	31 December 2021
CSA N288.4	Environmental Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills	2019	31 December 2021
CSA N288.5	Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills	2022	31 December 2021
CSA N288.6	Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills	2012 (R2017)	31 December 2021
CSA N288.7	Groundwater Protection Programs at Class I Nuclear Facilities and Uranium Mines and Mills	2015 (R2020)	31 December 2021

Commitments under this Licence Condition

ENVIRONMENTAL PROTECTION

The licensee shall provide additional information or documentation, as required, to address the following commitments made during the licensing regulatory review. Those commitments that are tied to a regulatory hold point are also identified in licence condition 15.3 and the *BWRX-300 Licensing Regulatory Actions* document.

Commitment Grouping	Description	Number	Tied to Hold Point
Environmental Risk Assessment	Environmental Risk Assessment (ERA) for DNNP Construction	9.1.1	Installation of RB Foundation
Environmental Risk Assessment	Best-Available Technology Economically Achievable (BATEA) Assessment: Effluents	9.1.2	Installation of RB Foundation
Effluent and Emissions Control	Environmental Management and Protection Plan (EMPP) For DNNP Construction	9.2.3	Installation of RB Foundation
Effluent and Emissions Control	Information for D-C-2 *Non-Radiological Effluent Management Program*	9.2.4	Fuel-Out Commissioning
Effluent and Emissions Control	Information for Commitment D-C-4 *Radiological Effluent Management Program*	9.2.5	Fuel-Out Commissioning
Effluent and Emissions Control	Information for Commitment D-C-5 *Radiological and Non-Radiological Air Emissions Program*	9.2.6	Fuel-Out Commissioning
Effluent and Emissions Control	Information for Commitment D-C-6 *Radiological Environmental Monitoring Program*	9.2.7	Fuel-Out Commissioning

Licensee Documents that Require Notification of Change

The following document(s) require written notification of change:

ENVIRONMENTAL PROTECTION

Document Title	Document #	Prior Notification
Effluent and Emissions Control		
Monitoring of Nuclear and Hazardous Substances in Effluents	N-STD-OP-0031	No
Environmental Approvals	N-PROC-OP-0037	No
Environmental Management System (EMS)		
Environmental Policy	OPG-POL-0021	No
Environment Health and Safety Managed Systems	OPG-PROG-0005	No
Contaminated Lands Management	N-PROC-OP-0044	No
Groundwater Protection and Monitoring Program	N-STD-OP-0046	No
Hazardous Material Management	OPG-PROC-0126	No
Assessment and Monitoring		
Environmental Monitoring and Environmental Assessment Follow-Up for the Darlington New Nuclear Project	NK054-PLAN-07730-00014	No
Management of the Environmental Monitoring Programs	N-PROC-OP-0025	No
Environmental Risk Assessment (ERA)		
Darlington Nuclear Environmental Risk Assessment	NK38-REP-07701-00001	No

Effluent and Emissions Control:

The licensee shall ensure effluent monitoring for nuclear substances (should any be encountered above exemption quantities identified in the *Nuclear Substances and Radiation Devices Regulations*), as well as hazardous substances, is designed, implemented, and managed to respect applicable laws and to incorporate best practices.

ENVIRONMENTAL PROTECTION

The effluent monitoring program shall provide for the control of any airborne and waterborne effluents. Effluent monitoring is a risk-informed activity which assures the quantification of important releases of hazardous and nuclear substances into the environment. OPG's DNNP effluent monitoring program shall be compliant with CSA standard N288.5 – *Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills*.

Nuclear Substances:

If nuclear substances above exemption quantities are encountered during site construction activities, appropriate measures will need to be put in place to monitor and control any releases to the environment.

Hazardous Substances:

The licensee shall control any releases of hazardous substances according to the limits defined in the licensing basis, in accordance with the applicable environmental compliance approvals (ECA), provincial, and other federal legislation, and take action to investigate and correct the cause(s) of any increased releases.

Environmental Management System:

The objective of the environmental protection policies, programs, and procedures is to establish adequate provisions for protection of the environment. This shall be accomplished through an integrated set of documented activities of an environmental management system (EMS).

OPG shall implement and maintain an environmental management system to assess environmental risks associated with its nuclear activities, and to ensure these activities are conducted in such a way that adverse environmental effects are prevented or mitigated. OPG's environmental management program shall be compliant with REGDOC-2.9.1 – *Environmental Protection Policies, Programs, and Procedures*, version 1.2 (2017).

OPG shall ensure that all aspects of its environmental management system are effectively implemented in order to ensure compliance with the environmental regulatory requirements and expectations, including those set in the International Organisation for Standardisation (ISO) 14001 – *Environmental Management Systems*. OPG's EMS is registered to this ISO standard. CNSC staff note that having the ISO 14001 certification is not part of the CNSC requirement to have an EMS in place; however, it shows that a third party has recognised OPG's EMS as being in accordance with the standard.

OPG-POL-0021 – *Environmental Policy*, and OPG-PROG-0005 – *Environment Health and Safety Managed Systems*, are key documents of the Environmental Protection program.

Assessment and Monitoring:

An environmental monitoring program consists of a risk-informed set of integrated and documented activities to sample, measure, analyse, interpret, and report the following:

- The concentrations of hazardous and/or nuclear substances in environmental media, to assess one or both of the:
  - Exposure of receptors to those substances; and
  - Potential effects on human health, safety, and on the environment.
- The intensity of physical stressors and/or their potential effect on human health and on the environment.
- The physical, chemical, and biological parameters of the environment that are normally considered in the design of the environmental monitoring program.

OPG's Environmental Monitoring Program shall be compliant with CSA standard N288.4 – *Environmental Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills* (2019).

As described in the table of licensing commitments above, the licensee shall submit the updated DNNP Environmental Management and Protection Plan (EMPP) for CNSC staff review prior to the commencement of licensed activities.

Groundwater Monitoring:

OPG has a groundwater monitoring program in place to monitor and evaluate the groundwater quality and conditions at the Darlington Nuclear site. OPG's program shall be in compliance with CSA N288.7 – *Groundwater Protection Programs at Class I Nuclear Facilities and Uranium Mines and Mills* (2015).

OPG has indicated that groundwater flow will be temporarily affected as a result of dewatering activities during construction activities of the reactor building, and has committed to incorporating best-available techniques to minimise any potential effects on the environment. The licensee shall implement best-available and industry-standard dewatering measures, as indicated in any environmental authorisations or permits issued by the appropriate regulatory authority.

The *Environmental Monitoring and Environmental Assessment Follow-Up Report* documents follow-up actions related to the geological and hydrogeological environmental component, which includes groundwater monitoring actions. OPG shall ensure it implements these follow-up actions throughout the construction licensing period. Refer to licence condition 15.2 for compliance verification criteria related to the Environmental Monitoring and Environmental Assessment Follow-Up program.

OPG shall provide the results of its routine groundwater monitoring program at the DNNP on an annual basis in its report on groundwater at the Darlington Nuclear site.

Protection of the Public:

This aspect relates to the assessment of predicted human health effects measured and potential quantities of hazardous substances in the abiotic and biotic environment of the Darlington New Nuclear Project site. This aspect is also linked to the "Dose to the Public" specific area as well as the "Environmental Risk Assessment" specific area.

Environmental Risk Assessment:

In accordance with CSA N288.4 and N288.5, an Environmental Risk Assessment (ERA) establishes the basis for both the environmental monitoring program and the effluent monitoring programs. The ERA for the DNNP shall be prepared and updated to reflect the current state of the site, and shall include the results from the environmental and effluent monitoring programs in order to confirm the effectiveness of any additional mitigation measures needed.

The DNNP ERA shall include a Human Health Risk Assessment (HHRA) and an Ecological Risk Assessment (EcoRA) and be compliant with CSA N288.6 – *Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills* (2012 edition). The ERA will also be used to identify any new risks to the environment based on activities identified for construction.

In correspondence to CNSC staff dated 27 July 2023 (OPG CD# NK054-CORR-00531-10825, e-Doc 7095290), OPG has committed to completing a predictive ERA and submitting it for CNSC staff review, prior to the commencement of construction activities. As described in the table of licensing commitments above, the licensee shall provide the predictive ERA for CNSC staff review and acceptance prior to the commencement of licensed activities.

OPG has also committed to providing a BATEA/ALARA Assessment for effluents released from the DNNP to CNSC staff for review, prior to the commencement of construction activities. The licensee shall provide the BATEA/ALARA Assessment for effluents for CNSC staff review prior to the commencement of licensed activities.

Recommendations and Guidance:

Guiding principles and factors for CNSC staff consideration are also given in REGDOC-2.9.1 – *Environmental Protection: Environmental Principles, Assessments, and Protection Measures, version 1.2* (2020).

The Commission approved regulatory document REGDOC-2.9.2 – *Controlling Releases to the Environment* in February 2024 (Record of Decision e-Doc 7227900). REGDOC-2.9.1 sets out requirements and guidance for controlling any releases of hazardous or nuclear substances to the environment, by establishing and implementing licensed release limits and action levels, commissioning and confirming performance of an effluent treatment system, and implementing adaptive management practices where required. OPG will be requested to provide a gap assessment and a plan for the implementation of REGDOC-2.9.2.

OPG should consider incorporating the information provided in REGDOC-2.9.1 and REGDOC-2.9.2 when conducting its BATEA assessment for selecting and optimising effluent treatment systems.

It is recommended that the licensee provide to the CNSC a copy of the reports sent to the Ministry of the Environment, Conservation, and Parks (MECP) and Environment and Climate Change Canada (ECCC) on hazardous releases.

10 SCA – EMERGENCY MANAGEMENT AND FIRE PROTECTION

10.1 Emergency Preparedness Program

The Safety and Control Area "Emergency Management and Fire Protection" includes an overall review of the conduct of the licensed activities and the activities that enable effective performance.

Licence Condition:

The licensee shall implement and maintain an emergency preparedness program.

Preamble:

The *Class I Nuclear Facilities Regulations* require that a licence application contain information on the licensee's proposed mitigating measures for on-site and off-site events. This includes measures to prevent or mitigate the effects of accidental releases of nuclear and hazardous substances to the environment, in order to protect the health and safety of persons, to ensure the maintenance of national security, as well as to assist off-site planning authorities regarding an accidental release for:

- Planning and preparing to limit the effects of accidental releases of nuclear or hazardous substances
- Notification
- Reporting of information during and after the event
- Assisting off-site authorities with dealing with effects, and
- Testing the implementation of the measures to prevent or mitigate the effects.

As part of its emergency preparedness program, the licensee shall have a public information program consistent with CNSC regulatory document REGDOC-3.2.1 – *Public Information and Disclosure*. This is addressed in licence condition G.6.

In addition to the nuclear emergency plan, the licensee should develop a set of emergency operating procedures and abnormal plant condition operating procedures. This aspect is covered under licence condition 3.1.

A security force response to malevolent acts is governed by a separate plan under the licensee's nuclear security program; however, provisions of the licensee's site security report will apply to associated potential threats. Licence condition 12.1 covers the Darlington site-specific nuclear security program.

Compliance Verification Criteria:

The licensee shall implement and maintain programs to ensure emergency preparedness. These programs shall, commensurate with the licensed activities proposed during the construction phase, comply with the requirements set out in CNSC regulatory document REGDOC-2.10.1 – *Nuclear Emergency Preparedness and Response*.

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-2.10.1	Nuclear Emergency Preparedness and Response	2	31 December 2021

The licensee shall have in place processes to ensure continuity of business in the event of an emergency, which encompasses both emergency preparedness and response measures. It ensures that appropriate response capabilities are developed and maintained available for use. The emergency preparedness program consists of:

- The basis for emergency planning
- The selection and qualification of personnel in the emergency organisation
- Establishment and maintenance of emergency preparedness and response organisations
- Maintenance of staffing levels
- Emergency training, drills, and exercises
- Emergency facilities and equipment
- Emergency procedures
- Assessment of response capability
- Assessment of accidents
- Protection of facility personnel and equipment
- Interface with off-site organisations
- Public information and public education program.

The licensee's *Consolidated Nuclear Emergency Plan* (CNEP) deals with emergency situations that could endanger the safety of on-site staff, the environment, and the public. It focuses on response capabilities to deal with releases of radioactive materials from fixed facilities and to outline interfaces with the Province of Ontario's Provincial Nuclear Emergency Response Plan (PNERP). Infrastructures defined within the PNERP can also be used in the planning for, and response to, conventional emergency events as well as nuclear. The licensee's Nuclear Emergency Plan also represents a basis for controlling changes and modifications to the nuclear emergency preparedness program.

OPG shall ensure that emergency exercises and drills, as required and commensurate with the activities proposed during construction, are conducted as described in OPG's emergency exercise and drills plan for the Darlington site.

EMERGENCY MANAGEMENT AND FIRE PROTECTION

The licensee shall have in place an emergency response plan to control, mitigate, and monitor events related to the spill of hazardous substances (see LC 9.1).

Licensee Documents that Require Notification of Change

The following documents require written notification of change:

Document Title	Document #	Prior Notification
Consolidated Nuclear Emergency Plan	N-PROG-RA-0001	Yes

Recommendations and Guidance:

None. The licensee should design its emergency management program in accordance with the guidance and expectations set out in CSA N1600 – *General Requirements for Nuclear Emergency Management Programs (2021 edition).*

10.2 Fire Protection Program

Licence Condition:

The licensee shall implement and maintain a fire protection program.

Preamble:

Licensees of Class I nuclear facilities require a comprehensive Fire Protection Program (FPP) to ensure the licensed activities do not result in an unreasonable risk to the health and safety of persons, and to the environment, due to fire and to ensure that the licensee is able to efficiently and effectively respond to emergency fire situations.

Fire protection provisions, including response, are required for the design, construction, commissioning, and maintenance of nuclear facilities—including structures, systems, and components that directly support the plant and the protected area.

Compliance Verification Criteria:

The licensee shall implement and maintain programs to ensure fire protection in the design, construction, commissioning, and maintenance of SSCs important to nuclear safety. These programs shall comply with the requirements set out in CSA standard N293 – *Fire Protection for CANDU Nuclear Power Plants*, and in Supplement 1 to N293.

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
CSA N293[3]	Fire Protection for Nuclear Power Plants	2023	31 December 2021
CSA N293-S1	Supplement No. 1 to N293 – Fire Protection for Nuclear Power Plants (Application to Small Modular Reactors)	2021 (R2022)	31 December 2021

Fire Protection

The licensee shall ensure the Fire Hazard Assessment and Fire Safe Shutdown Assessment are reviewed against the requirements of CSA N293 on a recurring basis. The licensee shall ensure a

[3] The 2023 edition of CSA N293 incorporates requirements from N293S1. The licensee has indicated compliance with the 2012 (Reaffirmed 2017) edition of CSA N293.

qualified third party performs an assessment and audit of the Fire Protection Program as required by CSA N293. The resulting inspection and audit reports shall be submitted to CNSC staff.

Fire Response

The licensee shall provide details of its service agreement with the Municipality of Clarington Emergency Services, to ensure that the Municipality is prepared and capable of responding to any events on the DNNP site.

The licensee shall ensure that a third-party audit of one industrial fire brigade drill is conducted in accordance with CSA N293. The purpose of the third-party audit is to provide an in-depth analysis of the industrial fire brigade's fire response performance against applicable regulatory requirements.

An independent third-party auditor is required to be an expert in their discipline (e.g., firefighting), and is qualified through specific education and relevant experience. This auditor shall be independent or at "arms-length" from the facility to ensure impartiality. The review shall be of sufficient depth and detail such that the reviewer can attest, with reasonable confidence, on the competencies of the IFB at the facility.

Licensee Documents that Require Notification of Change

Document Title	Document #	Prior Notification
None.		

Recommendations and Guidance:

CNSC staff use Nuclear Energy Institute (NEI) document 00-01 – *Guidance for Post Fire Safe Shutdown Circuit Analysis* to help determine the adequacy of safe shutdown electrical circuit analysis.

The results of the Third Party Audit report will typically consist of a report which compares the requirements of the applicable codes and standards against the implementation of the fire protection program or the fire response exercises, based on the scope of the audit. The report should also identify any non-compliance and formulate a conclusion if the licensee's fire protection program or industrial fire brigade meets the requirements of CSA N293.

As a guideline, the report should provide sufficient detail to support the conclusion and convey that the requirements of CSA N293 are met. The documentation for the audit should include, at a minimum, the following:

- The scope and the objective of the audit.
- A list of applicable codes and standards.
- A summary of the review methodology, including areas and documents reviewed.
- Detailed observations or issues that have been identified.
- A conclusion that identifies whether the FPP or IFB response meets applicable regulatory requirements, and achieves the FPP or IFB response objectives.
- A summary of any non-compliance(s), recommendations should there be any, and the corrective action plan.
- The report should be signed by the person taking responsibility for the review.

11 SCA – WASTE MANAGEMENT

11.1 Waste Management for Construction

The Safety and Control Area "Waste Management" covers internal waste-related programs which form part of the facility's or licensed activities operations up to the point where the waste is removed from the facility or site to a separate waste management facility. The Waste Management SCA also covers the planning for decommissioning.

Licence Condition:

The licensee shall implement and maintain a waste management program.

Preamble:

The *General Nuclear Safety and Control Regulations* require that a licence application contain information related to the in-plant management of radioactive or hazardous wastes resulting from the licensed activities.

The *Class I Nuclear Facilities Regulations* require that a licence application contain the proposed procedures for handling, storing, loading, and transporting nuclear and hazardous substances.

The activities encompassed under the PRCL will not involve the handling of radioactive materials and will not generate any radioactive wastes. Hazardous wastes generated as a result of construction activities will be limited to those used for standard construction projects.

Compliance Verification Criteria:

The licensee shall implement and maintain a program for the management of hazardous wastes produced from licensed activities, that shall include strategies for waste minimisation.

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-2.11.1*	Waste Management, Volume I: Management of Radioactive Waste	1	31 December 2021

** CNSC staff note that only Sections 5, Graded Approach, and 6, Waste Management Program, from REGDOC-2.11.1 shall apply for purposes of this licence.*

Commitments under this Licence Condition

The licensee shall provide additional information or documentation, as required, to address the following commitments made during the licensing regulatory review. Those commitments that are tied to a regulatory hold point are also identified in licence condition 15.3 and the *BWRX-300 Licensing Regulatory Actions* document.

Commitment Grouping	Description	Number	Tied to Hold Point
Waste Minimisation	Submission of Hazardous Waste Management Program documentation	11.1.1	Installation of RB Foundation
Environmental Risk Assessment	Best-Available Technology Economically Achievable (BATEA) Assessment: Effluents	9.1.2	Installation of RB Foundation

Licensee Documents that Require Notification of Change

Document Title	Document #	Prior Notification
Environment Health and Safety Managed System	OPG-PROG-0005	No
Management of Waste and Other Environmentally Regulated Materials	OPG-STD-0156	No

The licensee shall submit details of the program to manage hazardous wastes produced as a result of licensed activities, including characterisation and a plan for the minimisation of wastes expected to be produced, for CNSC staff review prior to the commencement of licensed activities.

The licensee shall:

- Characterise its waste streams and minimise the production of all wastes, taking into consideration the health and safety of workers and of the environment.
- Integrate waste management programs as a key element of the safety culture.
- Perform audits of the waste management program to ensure the program achieves its objectives and maximises its efficiency.

If nuclear substances above exemption quantities are encountered during construction activities, appropriate measures such as those described in OPG's W-PROG-WM-0001 – *Nuclear Waste Management* program, shall be put into place to manage any radioactive wastes generated. In

WASTE MANAGEMENT

addition, appropriate measures for packaging and transport of nuclear substances will need to be put in place.

Recommendations and Guidance:

None.

11.2 Preliminary Decommissioning Plan for Construction

Licence Condition:

The licensee shall implement and maintain a decommissioning plan.

Preamble:

Paragraph 3(k) of the *Class I Nuclear Facilities Regulations* requires that a licence application contain the proposed plan for the decommissioning of the nuclear facility or of the site.

This licence condition requires that the licensee maintains a Preliminary Decommissioning Plan (PDP), which provides an overview of the proposed decommissioning approach that is sufficiently detailed to assure that the proposed approach is—in light of existing knowledge—technically and financially feasible, and appropriate in the interests of health, safety, security, and the protection of the environment.

The PDP defines areas to be decommissioned and the general structure and sequence of the principal work packages. The PDP forms the basis for establishing and maintaining a financial arrangement (or financial guarantee, as described in LC G.5) that will assure adequate funding of the decommissioning plan.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-2.11.2	Decommissioning	1	31 December 2021
CSA N294	Decommissioning of Facilities Containing Nuclear Substances	2019	31 December 2021

Commitments under this Licence Condition

The licensee shall provide additional information or documentation, as required, to address the following commitments made during the licensing regulatory review. Those commitments that are tied to a regulatory hold point are also identified in licence condition 15.3 and the *BWRX-300 Licensing Regulatory Actions* document.

Commitment Grouping	Description	Number	Tied to Hold Point
None.	None.		

WASTE MANAGEMENT

Licensee Documents that Require Notification of Change

The following document(s) require written notification of change:

Document Title	Document #	Prior Notification
Preliminary Decommissioning Plan – DNNP – As-Built	NK054-PLAN-00960-00006	Yes
Preliminary Decommissioning Plan – Darlington New Nuclear Project – End of Life*	NK054-PLAN-00960-00007	No
Decommissioning Program	W-PROG-WM-0003	Yes

* *OPG shall provide notification of change to this document for information only.*

The decommissioning plan shall be kept current to reflect any changes in the site or nuclear facility. The decommissioning plan shall be revised at a minimum of every five years, or unless otherwise specified by the Commission. OPG submitted the updated PDPs for the construction phase as part of its Licence to Construct application in October 2022.

Recommendations and Guidance:

None.

12 SCA – SECURITY

12.1 Security Program

The Safety and Control Area "Security" covers the programs required to implement and support the security requirements stipulated in the *Nuclear Security Regulations*, the licence, orders, or expectations for the facility or activity.

Licence Condition:

The licensee shall implement and maintain a security program.

Preamble:

The *General Nuclear Safety and Control Regulations* require that a licence application contain information related to site access control and measures to prevent loss or illegal use, possession, or removal of the nuclear substance(s), prescribed equipment, or prescribed information.

The *Class I Nuclear Facilities Regulations* require that a licence application contain the proposed measures to prevent acts of sabotage or attempted sabotage at the nuclear facility.

The *Nuclear Security Regulations* require that a licence application contain specific information related to nuclear security, stipulates the requirements for high-security sites, and contains specific requirements pertaining to the transportation of Category I, II, or III nuclear material. As OPG will not be authorised to acquire or possess nuclear material under this licence, the DNNP does not yet meet the criteria established under the *Nuclear Security Regulations* for a high-security site.

OPG's security measures are expected to mitigate potential security risks through a series of physical security installations at the DNNP site, combined with programmatic security measures designed to mitigate:

- Security threats, risks, and vulnerabilities identified in the Site Selection Threat Risk Assessment Report

Licensed activities will be occurring within the DNNP controlled area, with local access to work areas controlled by the IPD contractor's staff. The DNGS controlled area, which includes the DNNP site, is subjected to regular controlled area Nuclear Security Officer (NSO) patrol. There will be no specific NSO assignments to construction work; however, current security program activities and responses cover the Darlington site as a whole.

Therefore, the security program implemented for DNNP will be revised to address regulatory requirements associated with the project as it progresses. OPG will implement security measures appropriate for each phase of the project, including construction, to ensure compliance with the

Nuclear Security Regulations, the *General Nuclear Safety and Control Regulations*, related security regulatory documents and applicable codes and standards, as well as any additional measures required to protect the nuclear facility, nuclear and radioactive material, prescribed information, and prescribed equipment against security risks identified in the *Site Security Threat and Risk Assessment*.

Compliance Verification Criteria:

Security Program

The licensee shall implement and maintain programs to ensure the security of the nuclear facility. These programs shall comply, commensurate with the extent of licensed activities, with the requirements set out in CNSC regulatory document REGDOC-2.12.2 – *Site Access Security Clearance*.

The licensee shall ensure that, commensurate with the extent of licensed activities, the DNNP is protected against credible threats identified in specific Threat and Risk Assessment documentation.

The licensee shall maintain the operation, design, and analysis provisions credited in the site-specific security assessments as required to ensure adequate engineered safety barriers for the protection against malevolent acts. These provisions shall be documented as part of a managed sub-program or process within the licensee's management system.

For greater clarity, the licensee maintains a nuclear response force organisation for the existing Darlington Nuclear Generating Station (DNGS), subject to licensing requirements of that facility. The provisions in this handbook related to nuclear security are applicable to the extent commensurate with activities occurring on the DNNP site and covers any interface between the DNNP and DNGS nuclear security program. Nothing in this Handbook alleviates the obligation of the licensee from compliance with the nuclear security program requirements managed under the DNGS operating licence.

Contractor(s) executing work on behalf of the licensee under the IPD model shall also prepare a Site Access and Security Protocol, and OPG should also review and accept the equivalent Site Access and Security Protocol covering activities on site during the construction phase.

Cyber Security

The licensee shall develop, implement, and maintain a cyber security program to protect cyber assets that perform or impact nuclear safety, nuclear security, emergency preparedness, or safeguard functions from cyber attack. The cyber security program shall be in accordance with CSA N290.7 – *Cyber Security for Nuclear Power Plants and Small Reactor Facilities*.

The licensee shall develop and implement a process to identify and classify cyber essential assets in accordance with OPG-PROG-0042 – *Cyber Security*, and in line with industry best practices. The licensee shall provide this list for CNSC staff review.

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-2.12.1	High Security Facilities, Volume I: Nuclear Response Force	2	31 December 2021
REGDOC-2.12.1	High Security Facilities, Volume II: Criteria for Nuclear Security Systems and Devices	2	31 December 2021
REGDOC-2.12.2	Site Access Security Clearance	1	12 October 2021
CSA N290.7	Cyber Security for Nuclear Power Plants and Small Reactor Facilities	2021	12 October 2021

Commitments under this Licence Condition

The licensee shall provide additional information or documentation, as required, to address the following commitments made during the licensing regulatory review. Those commitments that are tied to a regulatory hold point are also identified in licence condition 15.3 and the *BWRX-300 Licensing Regulatory Actions* document.

Commitment Grouping	Description	Number	Tied to Hold Point
Cyber Security	Submission of Defensive Cyber Security Architecture and Specification Information for Construction	12.6.1	Installation of RB Foundation
Cyber Security	Submission of Cyber Security Procurement Requirements for Cyber Assets	12.6.2	Installation of RB Foundation

Licensee Documents that Require Notification of Change

The following document(s) require written notification of change:

Document Title	Document #	Prior Notification?
Nuclear Security	N-PROG-RA-0011	Yes
Cyber Security	OPG-PROG-0042	No
Cyber Security	N-PROC-RA-0135	No

Recommendations and Guidance:

The licensee should design its security program to comply, commensurate with the extent of licensed activities, with the requirements set out in the following CNSC regulatory documents:

- REGDOC-2.12.1 – *High Security Sites, Volume I: Nuclear Response Force*.
- REGDOC-2.12.1 – *High Security Sites, Volume II: Criteria for Nuclear Security Systems and Devices*.
- REGDOC-2.2.4 – *Fitness for Duty, Volume III: Nuclear Security Officer Medical, Physical, and Psychological Fitness*.

For greater clarity, the licensee maintains a nuclear response force organisation for the existing Darlington Nuclear Generating Station, subject to licensing requirements of that facility. CNSC staff expect that the licensee will ensure that the security program for the DNNP will be compliant with these regulatory documents in a potential future application for a licence to operate.

Further guidance on security programs may be found in the following IAEA Nuclear Security Series (NSS) documents:

- NSS-4 – *Technical Guidance: Engineering Safety Aspects of Nuclear Power Plants Against Sabotage*.
- NSS-13 – *Recommendations: Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities*.
- NSS-17 – *Technical Guidance: Computer Security at Nuclear Facilities*.

13 SCA – SAFEGUARDS AND NON-PROLIFERATION

13.1 Safeguards Program

The Safety and Control Area "Safeguards and Non-Proliferation" covers the programs required for the successful implementation of the obligations arising from the Canada/IAEA Safeguards Agreement, as well as all other measures arising from the *Treaty on the Non-Proliferation of Nuclear Weapons*.

Licence Condition:

The licensee shall implement and maintain a safeguards program.

Preamble:

Safeguards is a system of inspection and other verification activities undertaken by the IAEA in order to evaluate a state's compliance with its obligations pursuant to its safeguards agreements with the IAEA.

Canada has entered into a Safeguards Agreement and an Additional Protocol (hereafter referred to as "safeguards agreements") with the IAEA, pursuant to its obligations under the *Treaty on the Non-Proliferation of Nuclear Weapons* (INFCIRC/140). The objective of the Canada/IAEA Safeguards Agreements is for the IAEA to provide assurance on an annual basis to Canada and to the international community that all declared nuclear materials are in peaceful, non-explosive uses, and that there is no indication of undeclared nuclear materials or activities. This conclusion confirms that Canada is in compliance with its obligations under the following Canada/IAEA safeguards agreements:

- *Agreement between the Government of Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons*; and
- *Protocol Additional to the Agreement between Government of Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons.*

These are reproduced in information circulars INFCIRC/164 and INFCIRC/164/Add. 1.

The *General Nuclear Safety and Control Regulations* require the licensee to take all necessary measures to facilitate Canada's compliance with any applicable safeguards agreement and defines reporting requirements for safeguards events.

The *Class I Nuclear Facilities Regulations* require that a licence application contain information on the licensee's proposed measures to facilitate Canada's compliance with any applicable safeguards agreement.

OPG has submitted a Design Information Questionnaire (DIQ) for review in order to meet the CNSC requirement to provide preliminary safeguards information for the facility.

Compliance Verification Criteria:

CNSC regulatory document REGDOC-2.13.1 – *Safeguards and Nuclear Material Accountancy* sets out requirements and guidance for safeguards programs. The requirements and guidance in this document are essential to ensure Canada's compliance with the safeguards agreements entered into with the IAEA.

Throughout the licensing period the licensee shall, *inter alia*, make annual declarations pursuant to the Additional Protocol on its general plans for the succeeding 10-year period relevant to the development of the nuclear fuel cycle and provide access and assistance to IAEA inspectors.

The licensee shall not make changes to operation, equipment, or procedures that would affect the implementation of safeguards measures, except with the prior written approval of the Commission or CNSC staff as follows:

- Director, International Safeguards Division (ISD)
- Director General, Directorate of Security and Safeguards (DSS)
- Vice President, Technical Support Branch
- Executive Vice President and Chief Regulatory Operations Officer, Regulatory Operations Branch.

With respect to the implementation of safeguards measures, changes made by the licensee to operation, equipment, or procedures as a result of agreement between the licensee, the CNSC, and the IAEA are considered routine. However, if such a change would adversely impact Canada's compliance with its safeguards agreements, CNSC staff do not have the authority to give approval, as this would violate Canada's obligations arising from the Canada-IAEA Safeguards Agreement.

Additionally, the import and export of controlled nuclear substances, equipment, and information identified in the *Nuclear Non-Proliferation Import and Export Control Regulations* requires a separate authorisation from the CNSC, consistent with the *General Nuclear Safety and Control Regulations*. The guidance to request such authorisations is provided in REGDOC-2.13.2 – *Import and Export, version 2*.

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
REGDOC-2.13.1	Safeguards and Nuclear Material Accountancy	2018	12 October 2021
REGDOC-2.13.2	Import and Export	2	31 December 2021

Licensee Documents that Require Notification of Change

The following document(s) require written notification of change:

Document Title	Document #	Prior Notification
OPG Safeguards and Nuclear Material Accountancy Requirements	N-PROC-RA-0136	No
Nuclear Safeguards	N-PROG-RA-0015	Yes

Recommendations and Guidance:

None.

14 SCA – PACKAGING AND TRANSPORT

In accordance with REGDOC-1.1.2, the Packaging and Transport SCA is not applicable at the construction stage of the project.

15 SITE SPECIFIC

15.1 Mitigation Measures and Commitments for Construction

Licence Condition:

The licensee shall implement the mitigation measures proposed and commitments made during the Darlington Joint Review Panel process, including the applicable recommendations of the Darlington Joint Review Panel Report, in accordance with the Government of Canada response.

Preamble:

The federal Minister of the Environment and the President of the CNSC established a JRP to assess the environmental effects of the DNNP under the *Canadian Environmental Assessment Act* (CEAA), and to review OPG's application for a Licence to Prepare Site under the *Nuclear Safety and Control Act*.

Taking into consideration the JRP Report recommendations and the implementation of proposed mitigation measures, the Government of Canada (GOC) determined that the DNNP is not likely to cause significant adverse environmental effects.

The JRP Report presented 67 Recommendations directed across responsible authorities (RAs) and Federal Authorities (FAs), as well as the GOC, the Government of Ontario, the Municipality of Clarington, and OPG. In its response, the GOC has accepted or accepted the intent of all the JRP Recommendations within its jurisdiction. The GOC Response to the JRP Recommendations is presented in Appendix C of this LCH.

The majority of the JRP Recommendations are directed to RAs and FAs to require OPG to implement mitigation measures, conduct a specific follow-up or monitoring study, or other similar activity.

The JRP Recommendations as well as commitments in the following documentation, as applicable, have been consolidated in OPG document NK054-REP-01210-00078 – *Darlington New Nuclear Project Commitments Report*:

- The Environmental Impact Statement (EIS);
- Licence to Construct Application;
- Deliverables and Commitments made during the Licence to Prepare Site licensing period;
- DNNP Joint Review Panel (JRP) review process; and
- Applications filed to other Federal regulatory agencies by OPG.

The mitigation measures and commitments have been consolidated into specific deliverables reflecting the three major CNSC licence phases in which they will be completed (i.e., Licence to

Prepare Site, Licence to Construct, and Licence to Operate). Each deliverable contains the specific scope of the deliverable and the completion milestone.

Compliance Verification Criteria:

Licensee Documents that Require Notification of Change

Document Title	Document #	Prior Notification
Darlington New Nuclear Project Commitments Report	NK054-REP-01210-00078	Yes

OPG shall implement the mitigation measures proposed and commitments made during the JRP process, in accordance with the OPG *Darlington New Nuclear Project Commitments Report*. Appendix C lists all JRP Recommendations, the Government of Canada response, and the OPG commitment that is addressing the recommendation and other commitments.

The following table identifies the JRP recommendations and associated commitments that are applicable to construction. The licensee shall submit documentation for these deliverables as described in the *Commitments Report*.

Recommendation #	Topic	OPG Commitment
30, 32, 34, 35, 36, 37, 40	Condenser Cooling Water System	D-C-1.2
14, 16, 17, 26	Non-Radiological Effluent Management Program	D-C-2.1 D-C-2.2
49, 50, 57, 58, 63	Preliminary Safety Analysis and Design	D-C-3.1 D-C-3.1(a) D-C-3.2
14, 17, 54	Radiological Effluent Management Program	D-C-4.1
17, 26	Radiological and Non-Radiological Air Emissions Program	D-C-5.1 D-C-5.2 D-C-5.2(a) D-C-5.3

SITE SPECIFIC

Recommendation #	Topic	OPG Commitment
17, 18	Radiological Environmental Monitoring Program (REMP)	D-C-6.1
39	Contingency Plan for Flooding and Other Extreme Weather Hazards	D-C-7.1
N/A	Meteorological Monitoring Station	D-C-8.1
52, 53	Radioactive Waste Management Plan	D-C-9.1

Recommendations and Guidance:

None

SITE SPECIFIC

15.2 Environmental Assessment Follow-Up Program for Construction

Licence Condition:

The licensee shall implement and maintain an environmental assessment follow-up program.

Preamble:

Paragraph 14(c) of the *Canadian Environmental Assessment Act* (CEAA, 1992) stipulates that the environmental assessment process includes, where applicable, "the design and implementation of a follow-up program." The CEAA defines "follow-up program" as a program for:

- Verifying the accuracy of the environmental assessment of a project; and
- Determining the effectiveness of any measures taken to mitigate the adverse environmental effects of the project.

Compliance Verification Criteria:

Licensee Documents that Require Notification of Change

The following document(s) require written notification of change:

Document Title	Document #	Prior Notification
Environmental Monitoring and Environmental Assessment Follow-up Plan for the Darlington New Nuclear Project	NK054-PLAN-07730-00014	No

OPG shall maintain and further develop the scope of the EA follow-up program through a consultative process with the CNSC, Environment and Climate Change Canada, the Department of Fisheries and Oceans, Transport Canada, as well as in consultation with Indigenous Nations and Communities.

The follow-up program is intended to:

- Identify adequate baseline characterisation data for use in follow-up monitoring;
- Verify predictions of environmental effects identified in the environmental assessment;
- Determine the effectiveness of mitigation measures in order to modify or implemented new measures where required;

SITE SPECIFIC

- Support the implementation of adaptive management measures to address previously unanticipated adverse environmental effects;
- Provide information on environmental effects and mitigation that can be used to improve and/or support future environmental assessments including cumulative effects assessments; and
- Support environmental management systems used to manage the environmental effects of projects.

Adaptive management shall be inherent in the design and implementation of the EA follow-up and monitoring programs. Specific adaptive management elements shall be confirmed with the CNSC at each licensing step in the Project.

Recommendations and Guidance:

Appendix A, and specifically subsection A.3.10, *EA Follow-up Program*, of CNSC regulatory document REGDOC-2.9.1 – *Environmental Protection: Environmental Policy, Assessments, and Protection Measures* provides guidance for establishing and maintaining an EA follow-up program.

Section 12, *EA Follow-Up Program*, of CNSC document *Generic Guidelines for the Preparation of an Environmental Impact Statement pursuant to the Canadian Environmental Assessment Act, 2012*.

Section 6 of REGDOC-3.2.2 – *Indigenous Engagement, Engagement Activities after an Environmental Assessment or Licensing Decision*.

SITE SPECIFIC

15.3 Regulatory Hold Points for Construction Activities

Licence Condition:

The licensee obtain the approval of the Commission, or a person authorized by the Commission, prior to the removal of established regulatory hold points.

Preamble:

CNSC has selected 3 hold points, for which CNSC approval will be required prior to proceeding to the subsequent construction or commissioning phase. These verification points will require regulatory acceptance to confirm the adequacy of the designed and installed plant systems important to safety, and to satisfy regulatory requirements for staged progress through construction activities up to fuel-out commissioning activities.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
e-Doc 7261437	BWRX-300 Licensing Regulatory Actions	1	TBD

The licensee shall implement construction requirements as outlined in the CNSC *BWRX-300 Licensing Regulatory Actions* document.

The licensee shall seek approval of the Commission, or consent of a person authorised by the Commission, prior to proceeding beyond each of the following hold points. The regulatory hold points mark key milestones in the construction phase of the project and are described as follows:

- RHP-1: Installation of the Reactor Building Foundation – allowing for the installation of the foundation and subsequent Reactor Building construction.
- RHP-2: Installation of the Reactor Pressure Vessel (RPV) – allowing for the installation of the RPV and the connection of the RPV to associated systems and components.
- RHP-3: Fuel-Out Commissioning – allowing for the commencement of full-scale testing or commissioning activities of systems or components important to safety, but not with nuclear fuel.

For each of these regulatory hold points, the licensee shall submit Completion Assurance Documentation (CAD), or their equivalent, which will provide sufficient evidence that all pre-established conditions for removal have been met.

SITE SPECIFIC

The licensee shall submit documentation addressing each of the commitments or deliverables in the CNSC staff-level *DNNP LTC Commitments List* (CNSC e-Doc #7269313, OPG #TBD). This list outlines required submissions by the licensee, with each submission linked to a construction milestone and, where appropriate, a CNSC regulatory hold point. The provision of, concurrence, acceptance, or approval of these documents by CNSC staff shall be completed prior to the removal of the associated hold point.

OPG shall submit the documentation for the following pre-requisites prior to consideration for removal of the hold point. CNSC staff expectations are that the documentation will be provided, at minimum, no later than 90 calendar days prior to commencement of the activity (or activities), unless a different timeline is otherwise agreed upon. CNSC staff will provide comments, as appropriate. Once CNSC staff has reviewed and accepted the documents, CNSC staff will provide written consent to OPG to authorise the commencement of the licensed activities.

General Process to Remove Regulatory Hold Points

The process for the removal of the above RHPs shall be as follows:

1. The licensee submits a request to CNSC staff for the removal of the RHP.
2. The licensee's request must include sufficient information to demonstrate that all pre-requisites have been satisfied.
3. CNSC staff will review the submitted information and verify the licensee's compliance with regulatory requirements and commitments.
4. Based on a review of the information submitted, CNSC staff will provide a report, including recommendations, to the Delegated Authority as specified by the Commission, regarding whether the pre-requisites have or have not been met.
5. The Delegated Authority specified by the Commission will then provide a decision, either consenting or not consenting to the removal of the RHP.
6. CNSC staff will administer the removal of the RHP through a confirmation letter to the licensee.

Pre-Requisites for Removal of Verification Points:

RHP-1: Installation of the Reactor Building Foundation (Basemat)

The licensee shall submit the following information or documentation for CNSC review and acceptance, or ensure that CNSC acceptance or approval has been received, prior to the release of the hold point.

- All commitments identified in the *BWRX-300 Licensing Regulatory Actions* document as required prior to installation of the Reactor Building foundation (basemat), are complete.
- Any specified training for workers is completed and staff are qualified.

SITE SPECIFIC

- Specified SSCs meet the quality and completion requirements of CSA N286 – *Management Systems Requirements for Nuclear Facilities*.
- Any non-conformances or open items leading up to the installation of the RB foundation have been addressed.
- Verification by CNSC staff that all activities and commitments required prior to the emplacement of the Reactor Building foundation have been successfully completed.

RHP-2: Installation of the Reactor Pressure Vessel (RPV)

The licensee shall submit the following information or documentation for CNSC review and acceptance prior to the release of the hold point.

- All commitments identified in the *BWRX-300 Licensing Regulatory Actions* document as required prior to installation of the Reactor Pressure Vessel, are complete.
- Any specified training for workers is completed and staff are qualified.
- Any non-conformances or open items leading up to the installation of the RPV have been addressed.
- Specified SSCs meet the quality and completion requirements of CSA N286 – *Management Systems Requirements for Nuclear Facilities*.
- Verification by CNSC staff that all activities and commitments required prior to the emplacement of the Reactor Pressure Vessel have been successfully completed.

RHP-3: Prior to Fuel-Out Commissioning

The licensee shall submit the following information or documentation for CNSC review and acceptance prior to the release of the hold point. This phase is analogous to "Phase A," *Prior to Fuel Loading,* outlined in Appendix A of REGDOC-2.3.1 – *Conduct of Licensed Activities: Construction and Commissioning Programs*.

- All commitments identified in the *BWRX-300 Licensing Regulatory Actions* document as required prior to fuel-out commissioning, are complete.
- Any specified training for workers is completed and staff are qualified.
- Any non-conformances or open items leading up to the commencement of commissioning activities have been addressed.
- SSCs meet the quality and completion requirements of CSA N286 – *Management Systems Requirements for Nuclear Facilities* and REGDOC-2.3.1.
- Verification by CNSC staff that all activities and commitments required prior to the commencement of fuel-out, or Phase "A," commissioning have been successfully completed.

Recommendations and Guidance:

SITE SPECIFIC

Objective evidence should be provided to support the confirmation that systems, structures, and components important to safety meet the quality and completion requirements of CSA N286 – *Management System Requirements for Nuclear Facilities*.

For clarity, this should include information supporting that the Design, Engineering, Procurement, Construction, Installation, and Implementation activities, as applicable to each hold point, are complete and their results deemed safe for the intended use, and their respective critical characteristics and requirements have been met.

The licensee should submit documentation required using the notification definitions presented below.

- For information, any documentation that does not require a response from CNSC staff, and is intended to supplement information required to demonstrate adherence to a regulatory requirement.
- For notification, any documentation that is submitted with a cover letter for CNSC staff review, but to which the licensee does not require a response.
- For prior notification, any documentation that is submitted with a cover letter for CNSC staff review where at least a conditional acceptance, concurrence, or approval is required.

DEFINITIONS

The following is a list of definitions of words or expressions used throughout this LCH that may require clarification. Unless a reference source is provided in parentheses, the words or expressions have been defined for the purpose of the LCH.

Accept/ed/able/ance
Meets regulatory requirements, which means it is in compliance with regulatory documents or technical standards referenced in the licence.

Compliance verification criteria (CVC)
Criteria used to verify compliance with a licence condition, and provides the licensee and CNSC staff with detailed information to clarify regulatory requirements for compliance purposes.

Design basis
The range of conditions and events, taken into account in the design of the facility, according established criteria such that the facility can withstand them without exceeding authorised limits for the planned operation of safety systems.

Design basis accident (DBA)
As defined in CNSC regulatory document REGDOC-2.4.1 – *Deterministic Safety Analysis*, a DBA is an accident condition against which an NPP is designed according to established design criteria, and for which the damage to the fuel and the release of radioactive material are kept within authorised limits.

Design iteration
A recognition that the design of the BWRX-300 is undergoing continuing development following safety analyses and further refinements to designed Systems, Structures, and Components (SSC), and that key parameters or conditions may change.

Important to safety
Items that are important to safety, including but not limited to:

- Structures, Systems, or Components (SSC) whose malfunction or failure could lead to undue radiation exposure of the facility or site personnel, or members of the public;
- SSCs that prevent anticipated operational occurrences from leading to accident conditions;
- Those features that are provided to mitigate the consequences of malfunctions or failures of SSCs; and
- Tasks, duties, activities, ageing mechanisms, findings, or any work that, if improperly performed, could lead to radiation exposure to facility or site personnel or members of the public.

Recommendation and guidance
Non-mandatory suggestions on how to comply with the licence condition. Recommendations and guidance may include regulatory advice and/or recommended industry best practices to guide the licensee towards a higher level of safety, or satisfactory performance/implementation of its programs.

Safety and control measures
Those measures or provisions that demonstrate the applicant or licensee:

- Is qualified to carry on the licensed activities; and
- Has made adequate provision for the protection of the environment, the health and safety of persons, the maintenance of national security, and any measures required to implement international obligations to which Canada has agreed.

Written notification
A physical or electronic communication between a CNSC delegated authority and a person authorised to act on behalf of the licensee.

Written notification prior to implementation
The CNSC delegated authority must receive the written notification for the proposed changes within a reasonable time (based on the extent of the proposed changes and the potential impact on the safe operation of the facility) prior to the implementation. This will allow for sufficient time for CNSC staff to review the submission and determine its acceptability.

GLOSSARY OF TERMS

The following is a list of acronyms used throughout this document:

AIA	Authorised Inspection Agency
ALARA	As Low as Reasonably Achievable
ASME	American Society of Mechanical Engineers
BDBA	Beyond Design Basis Accident
BPVC	Boiler and Pressure Vessel Code
CEAA	Canadian Environmental Assessment Act
CMD	Commission Member Document
CNEP	Consolidated Nuclear Emergency Plan
CNSC	Canadian Nuclear Safety Commission
CSA	Canadian Standards Association
CVC	Compliance Verification Criteria
DBA	Design Basis Accident
DG	Director General
DNGS	Darlington Nuclear Generating Station
DNNP	Darlington New Nuclear Project
DWMF	Darlington Waste Management Facility
EA	Environmental Assessment
ECCC	Environment and Climate Change Canada
EIS	Environmental Impact Statement
EMEAF	Environmental Monitoring and Environmental Assessment Follow-Up
FHA	Fire Hazard Assessment
FSSA	Fire Safe Shutdown Assessment
OPG	Ontario Power Generation

APPENDIX A Administrative Practices

A.1 Delegation of Authority

Throughout the licence, the statement "*or consent of a person authorised by the Commission*" reflects a person in the CNSC staff organisation to whom the Commission may delegate certain authority (i.e., "consent"). Unless otherwise specified, the delegation of authority by the Commission to act as a "*person authorised by the Commission*" is only applied to the incumbents of the following position(s):

- The Director of the Advanced Reactors Licensing Division
- The Director-General of the Directorate of Advanced Reactor Technologies (DART); and
- The Executive Vice-President and Chief Regulatory Operations Officer (EVP-CROO) within the Regulatory Operations Branch.

Delegations of authority are recorded in the Commission *Record of Proceedings, including Reasons for Decision*; however, they may be documented elsewhere by the Commission.

A.2 LCH Change Control

The CNSC will apply a change control process with clear procedures to the LCH, in accordance with the CNSC Management System, to ensure that:

- The preparation and use of the LCH is properly controlled;
- All referenced documents are correctly identified and maintained;
- Changes to the LCH are conducted in accordance with CNSC REGDOC-3.5.3 – *Regulatory Fundamentals*; and
- Procedures to modify the LCH are followed.

The licensing basis is defined at the time a licence is issued or renewed. The principles for achieving compliance with the licensing basis will not change greatly during the licensing period; however, changes to the LCH may be requested by either CNSC staff or the licensee that may affect the specific details of these principles in order to achieve greater clarity and an equivalent level of safety. Whenever CNSC staff request a change to the LCH, the licensee will be consulted.

The following are examples of LCH change requests:

- Operating experience may reveal instances where Compliance Verification Criteria text may leave room for varying interpretations between the licensee and CNSC staff, where opportunities for further clarity would be required.

- Transitional provisions for new codes, standards, and regulatory documents which are defined in the CVCs may need to be revised. Assuming that the implementation plan was part of the licence application, such a development would result in a non-compliance with a licence condition (and be reportable under *REGDOC-3.1.1 – Reporting Requirements for Nuclear Power Plants, version 2*). CNSC staff could modify the implementation or transitional provisions date in the LCH and take any other necessary actions to avoid non-compliance with a licence condition.
- A result of a licensing decision issued by the Commission (e.g., amendment to the licence). One example may be the inclusion of, or revision to, regulatory documents, codes, and standards. These amendments may involve amending the CVC in the LCH.
- Updates to licensing commitments, such as updates to Environmental Assessments, relevant to the licensed facility may lead to additional commitments on the licensee that should be recorded as CVC in the LCH.
- Changes to recommendations and guidance, such as the inclusion or amendment of CNSC regulatory guidance documents or recommendations.

For licensee-requested changes to the LCH, CNSC staff will review the proposed changes and decide if the LCH should be modified. The Director-General, Directorate of Advanced Reactor Technologies has the authority to approve changes to the LCH.

In order to affect a modification to the LCH, the CNSC Project Officer will:

- Initiate a request using the Document Change Request (DCR) form, or equivalent;
- Coordinate the review by the identified Subject Matter Expert(s);
- Consult with the licensee, as required;
- Obtain endorsement from the Director, Advanced Reactors Licensing Division;
- Obtain approval and signature from the Director-General, DART;
- Update the LCH; and
- Distribute the updated version of the LCH.

If the change involves the revision of a written notification document, the licensing division will also update the registry used to track the version history and document number of the WN document(s).

A.3 Reporting to the Commission

Changes to the LCH will be tracked through the DCR. CNSC stuff will summarise all the changes made to the LCH and report them to the Commission for information in CNSC staff's annual report entitled "*Regulatory Oversight Report of Canadian Nuclear Power Plants*." This report is presented annually in a public proceeding of the Commission at a scheduled date. The

report should emphasise instances where the CVC were relaxed (such as by modifying target dates as discussed above).

CNSC staff review the content of the LCH annually to ensure that the collective changes made to the document did not result in an unauthorised change of scope. For example, CNSC staff will ensure that the LCH continues to maintain a clearly-documented set of compliance verification criteria, and that any changes remain within the licensing basis. The results of this review should also be presented to the Commission annually.

A.4 Document Control and Approval or Consent

A.4.1 Document Control and Oversight

Whenever proposed changes to version-controlled documents are accepted by the CNSC, the compliance verification criteria in the LCH must be updated (as per the LCH change control process described in Appendix A.2). The Director-General, Directorate of Advanced Reactor Technologies, has the authority to make changes to the compliance verification criteria, as long as the changes remain within the licensing basis.

The CNSC uses a risk-informed process to determine the type of regulatory oversight that is appropriate for each licensee document in the licensing basis. Written notification documents do not require prior Commission approval or CNSC staff consent of changes, but the changes are still reviewed by CNSC staff. Changes to written notification documents are not tracked through the LCH, but rather they are tracked by the licensing division using the registry described in Section A.2.

A.4.2 CNSC Review Criteria Related to Document Changes and Approvals/Consent

For the approvals of document changes or other changes described above in Section A.4.1, CNSC staff will verify that the licensee's submission includes the appropriate level of information with regards to the proposed changes or action, to the extent relevant:

- A summary description;
- An indication of the duration (either temporary or permanent);
- A justification;
- Any relevant supporting documentation;
- An evaluation of the impact on health, safety, security, the environment and Canada's international obligations; and
- An evaluation to determine if the resultant effects remain within the limits defined by the licensing basis.

The CNSC then assesses whether the following general criteria would be met for the proposed change or action:

- The proposed change or action will be made or done in accordance with the licensee's quality assurance and change control processes, applicable design guides, design requirements, standards, operating documentation, regulatory documents, applicable safety principles and applicable safeguards agreement.
- Following the proposed change or action, the licensee remains in compliance with requirements set out in the applicable laws, regulations and licence conditions, including the appendices of the licence.
- The proposed change or action is in the safe direction.
- Following the proposed change or action:
    - The licensee remains qualified to carry out the licensed activity;
    - The licensee has adequate provision for the protection of the health and safety of persons, protection of the environment, maintenance of national security, and measures required to implement international obligations to which Canada has agreed; and
    - The licensed activity remains within the limits defined by the licensing basis.

CNSC staff note the above criteria can also apply when staff review a notification of a licensee change that was already made.

If the licensee's request is being assessed by a delegated authority and it is found that the request for change or action does not meet all of the above criteria, the delegated authority will address the situation with the licensee to determine if adjustments to the proposal can satisfy all the criteria. If now, consideration of the change must be turned from the delegated authority back to the Commission.

A.5 Dispute Resolution

In the event of a disagreement on a proposed change to the LCH, CNSC staff and the licensee will attempt to resolve the issue. The following steps will be followed:

- A meeting with the appropriate parties, including Directors, will be scheduled by the Project Officer;
- The rationale supporting the decision and the decision itself will be documented; and
- If any party is not satisfied with the decision, the disagreement will be brought to the next level of authority, Directors-General or Vice-Presidents, as required.

APPENDIX B Lists of Version-Controlled Documents

B.1 All Canadian Nuclear Safety Commission (CNSC) Documents Referenced in the LCH

Document #	Document Title	Version	L.C.	e-Doc #
REGDOC-1.1.1	Site Evaluation and Site Preparation for New Reactor Facilities	1.2	G.1 9.1	CNSC Website
REGDOC-1.1.2	Licence Application Guide: Licence to Construct a Reactor Facility	2	All	CNSC Website
REGDOC-1.1.5	Supplemental Information for Small Modular Reactor Proponents	1	G.1	CNSC Website
REGDOC-2.1.2	Safety Culture	1	1.1	CNSC Website
REGDOC-2.2.1	Human Factors	1	2.1	CNSC Website
REGDOC-2.3.1	Conduct of Licensed Activities: Construction and Commissioning Programs	1	1.1 3.1 3.3	CNSC Website
REGDOC-2.3.2	Accident Management	2	3.1 4.1	CNSC Website
REGDOC-2.4.1	Deterministic Safety Analysis	1	4.1	CNSC Website
REGDOC-2.4.2	Probabilistic Safety Assessment (PSA) for Reactor Facilities	2	4.1	CNSC Website
REGDOC-2.4.3	Nuclear Criticality Safety	1.1	4.1	CNSC Website
REGDOC-2.5.1	General Design Considerations: Human Factors	1	5.1	CNSC Website

Document #	Document Title	Version	L.C.	e-Doc #
REGDOC-2.5.2	Design of Reactor Facilities	1	All	CNSC Website
REGDOC-2.6.1	Reliability Programs for Nuclear Power Plants	1	4.1 5.1	CNSC Website
REGDOC-2.6.3	Ageing Management	1	3.1 5.1	CNSC Website
REGDOC-2.8.1	Conventional Health and Safety	1	8.1	CNSC Website
REGDOC-2.9.1	Environmental Protection: Environmental Principles, Assessments, and Protection Measures	1.1	9.1	CNSC Website
REGDOC-2.10.1	Nuclear Emergency Preparedness and Response	2	10.1	CNSC Website
REGDOC-2.11.1	Waste Management, Volume 1: Management of Radioactive Waste (*Sections 5 and 6 only*)	1	11.1	CNSC Website
REGDOC-2.11.2	Decommissioning	1	11.2	CNSC Website
REGDOC-2.12.1	High Security Facilities, Volume I: Nuclear Response Force	2	12.1	Prescribed Information
REGDOC-2.12.1	High Security Facilities, Volume II: Criteria for Nuclear Security Systems and Devices	2	12.1	Prescribed Information
REGDOC-2.12.2	Site Access Security Clearance	1	12.1	CNSC Website
REGDOC-2.13.1	Safeguards and Nuclear Material Accountancy	1	13.1	CNSC Website
REGDOC-2.13.2	Import and Export	2	13.1	CNSC Website

APPENDIX A – ADMINISTRATIVE PRACTICES

Document #	Document Title	Version	L.C.	e-Doc #
REGDOC-3.1.1	Reporting Requirements for Nuclear Power Plants	2	3.2	CNSC Website
REGDOC-3.2.1	Public Information and Disclosure	1	G.6	CNSC Website
REGDOC-3.3.2	Indigenous Engagement	1.2	15.4	CNSC Website
REGDOC-3.3.1	Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities	1	G.5	CNSC Website

B.2 All Canadian Standards Association (CSA) and other Codes Documents Referenced in the LCH

Document #	Document Title	Version	L.C.
CSA B51	Boiler, Pressure Vessel, and Pressure Piping Code	2019	5.2
CSA C22.1	Canadian Electrical Code, Part 1 Safety Standard for Electrical Installations	2021	5.1
CSA C22.2	General Requirement – Canadian Electrical Code, Part 2	2021	5.1
CSA N1600	General Requirements for Nuclear Emergency Management Programs	2021	10.1
CSA N285.0	General Requirements for Pressure-Retaining Systems and Components in CANDU Nuclear Power Plants	2017 (R2022)	5.1
CSA N286	Management System Requirements for Nuclear Facilities	2012 (R2020)	1.1 2.1
CSA N286.7	Quality Assurance of Analytical, Scientific, and Design Computer Programs	2016 (R2021)	1.1 4.1

APPENDIX A – ADMINISTRATIVE PRACTICES

Document #	Document Title	Version	L.C.
CSA N286.10	Configuration Management for High Energy Reactor Facilities	2016	1.1
CSA N287.1	General Requirements for Concrete Containment Structures for Nuclear Power Plants	2014 (R2019)	5.1
CSA N287.2	Material Requirements for Concrete Containment Structures for Nuclear Power Plants	2017 (R2022)	5.1
CSA N287.4	Construction, Fabrication, and Installation Requirements for Concrete Containment Structures for Nuclear Power Plants	2019	5.1
CSA N287.5	Examination and Testing Requirements for Concrete Containment Structures for Nuclear Power Plants	2011 (R2016)	5.1
CSA N287.6[4]	Pre-Operational Proof and Leakage Rate Testing Requirements for Concrete Containment Structures for Nuclear Power Plants	2011 (R2021)	5.1
CSA N287.7	In-Service Examination and Testing Requirements for Concrete Containment Structures for Nuclear Power Plants	2017 (R2022)	5.1
CSA N287.8[5]	Aging Management for Concrete Containment Structures for Nuclear Power Plants	2015 (R2020)	5.1
CSA N288.4	Environmental Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills	2010 (R2019)	9.1
CSA N288.5	Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills	2011 (R2021)	9.1
CSA N288.6	Environmental Risk Assessments at Nuclear Facilities and Uranium Mines and Mills	2012 (R2017)	9.1
CSA N288.7	Groundwater Protection Programs at Class I Nuclear Facilities and Uranium Mines and Mills	2015 (R2020)	9.1

[4] See the discussion in LC 5.1 for the applicability of the N287.6 code.
[5] See the discussion in LC 5.1 for the applicability of the N287.8 code.

APPENDIX A – ADMINISTRATIVE PRACTICES

Document #	Document Title	Version	L.C.
CSA N289.1	General Requirements for Seismic Design and Qualification of Nuclear Power Plants	2018	5.1 5.3
CSA N289.2	Ground Motion Determination for Seismic Qualification of Nuclear Power Plants	2021	5.3
CSA N289.3	Design Procedures for Seismic Qualification of Nuclear Power Plants	2020	5.3
CSA N289.4	Testing Procedures for Seismic Qualification of Nuclear Power Plant Structures, Systems, and Components	2012 (R2017)	5.3
CSA N289.5	Seismic Instrumentation Requirements for Nuclear Power Plants and Nuclear Facilities	2012 (R2022)	5.3
CSA N290.0	General Requirements for Safety Systems of Nuclear Power Plants	2017	5.3
CSA N290.7	Cyber Security for Nuclear Power Plants and Small Reactor Facilities	2021	12.1
CSA N290.11	Requirements for Reactor Heat Removal Capability During Outage of Nuclear Power Plants	2021	3.1 4.1
CSA N290.12	Human Factors in Design for Nuclear Power Plants	2014 (R2019)	5.1
CSA N290.13	Environmental Qualification of Equipment for Nuclear Power Plants	2018	5.3
CSA N290.14	Qualification of Digital Hardware and Software for Use in Instrumentation and Control Applications for Nuclear Power Plants	2015	4.1 5.1
CSA N290.15	Requirements for The Safe Operating Envelope of Nuclear Power Plants	2019	3.1
CSA N290.7	Cyber Security for Nuclear Power Plants and Small Reactor Facilities	2021	12.1

APPENDIX A – ADMINISTRATIVE PRACTICES

Document #	Document Title	Version	L.C.
CSA N291	Requirements for Safety Related Structures for Nuclear Power Plants	2019	5.1
CSA N293	Fire Protection for Nuclear Power Plants	2012 (R2017)	5.1 10.2
CSA N293 S1	Supplement No. 1 to N293-12, Fire Protection for Nuclear Power Plants (Application to Small Modular Reactors)	2021 (R2022)	5.1 10.2
CSA N294	Decommissioning of Facilities Containing Nuclear Substances	2019	11.2
ANSI 56.8	Containment System Leakage Testing Requirements	2020	5.1
ASME BPVC	Boiler and Pressure Vessel Code	2021	5.1
NBCC	National Building Code of Canada	2020	5.1
NFCC	National Fire Code of Canada	2020	5.1
USNRC RG 1.26	Quality Group Classifications and Standards for Water-, Steam-, and Radioactive Waste-Containing Components of Nuclear Power Plants	5 (and 6)	5.2
USNRC RG 1.143	Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants	2	5.1
US 10 CFR 50 Appendix J	Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors	N/A	5.1

APPENDIX C List of Licensee Documents Requiring Written Notification

Document #	Document Title	Notification Requirements	L.C.
GENERAL			
OPG-PROG-0001	Information Management	When Implemented	G.2
NK054-DRAW-01210-00007	OPG New Nuclear at Darlington Survey Drawing	Prior to Implementation	G.3
NK054-REP-01210-00003	Exclusion Zone Determination for Darlington New Nuclear Project	Prior to Implementation	G.3
NK054-REP-00531-10004	Documentary Information Summary: DNNP Licence to Construct Financial Guarantee	Prior to Implementation	G.5
MANAGEMENT SYSTEM			
N-POL-0001	Nuclear Safety Policy	When Implemented	1.1
N-CHAR-AS-0002	Nuclear Management System	Prior to Implementation	1.1
N-PROG-AS-0001	Nuclear Management System Administration	When Implemented	1.1
N-STD-AS-0020	Nuclear Management Systems Organization	When Implemented	1.1
OPG-PROG-0001	Information Management	When Implemented	1.1
N-PROG-AS-0002	Human Performance	When Implemented	1.1
N-PROG-RA-0003	Performance Improvement	When Implemented	1.1
N-PROG-RA-0010	Independent Assessment	When Implemented	1.1
OPG-PROG-0009	Items and Services Management	When Implemented	1.1

Document #	Document Title	Notification Requirements	L.C.
OPG-PROG-0039	Project Management	When Implemented	1.1
HUMAN PERFORMANCE MANAGEMENT			
N-POL-0001	Nuclear Safety Policy	When Implemented	2.1
N-PROG-AS-0002	Human Performance	When Implemented	2.1
N-STD-AS-0002	Procedure Use and Adherence	When Implemented	2.1
N-STD-OP-0002	Communications	When Implemented	2.1
N-STD-OP-0004	Self-Check	When Implemented	2.1
N-STD-OP-0012	Conservative Decision Making	When Implemented	2.1
N-STD-RA-0014	Second Party Verification	When Implemented	2.1
N-PROC-OP-0005	Pre-Job Brief / Safe Work Plan and Post-Job Debriefing	When Implemented	2.1
OPERATING PERFORMANCE			
N-STD-OP-0036	Conservative Decision-Making	When Implemented	3.1
N-PROC-RA-0035	Operating Experience Process	When Implemented	3.1
N-PROC-RA-0022	Processing Station Conditions Records	When Implemented	3.1
N-PROG-RA-0003	Performance Improvement	When Implemented	3.1
N-PROG-MA-0004	Conduct of Maintenance	When Implemented	3.1
N-PROC-RA-0005	Written Reporting to Regulatory Agencies	When Implemented	3.2
N-PROC-RA-0020	Preliminary Event Notifications	When Implemented	3.2
NK054-PLAN-01210-00107	Darlington New Nuclear Project Construction Plan	When Implemented	3.3

APPENDIX C – LIST OF LICENSEE DOCUMENTS REQUIRING WRITTEN NOTIFICATION

Document #	Document Title	Notification Requirements	L.C.
NK054-PLAN-01210-00100 (Sheet 19)	Darlington New Nuclear Project Turnover and Commissioning Program Management Plan	When Implemented	3.3
SAFETY ANALYSIS			
N-PROG-MP-0014	Reactor Safety Program	When Implemented	4.1
N-PROG-MP-0006	Software	When Implemented	4.1
N-PROG-RA-0016	Risk and Reliability Program	When Implemented	4.1
N-PROC-MP-0086	Safety Analysis Basis and Safety Report	When Implemented	4.1
N-STD-MP-0019	Beyond Design Basis Accident Management	When Implemented	4.1
N-STD-RA-0034	Preparation, Maintenance, and Application of Probabilistic Safety Assessment	When Implemented	4.1
NK054-PLAN-01210-00100 (Sheet 4)	Darlington New Nuclear Project Engineering Program Management Plan	When Implemented	4.1
PHYSICAL DESIGN			
OPG-PROG-0039	Project Management	When Implemented	5.1
NK054-PLAN-01210-00035	Darlington New Nuclear Project (DNNP) Engineering Oversight	When Implemented	5.1
N-PROG-MP-0004	Pressure Boundary Program	Prior to Implementation	5.2
N-PROC-MP-0082	Design Registration	Prior to Implementation	5.2
NK054-REP-01210-00184	BWRX-300 Darlington New Nuclear Project (DNNP): Structures,	Prior to Implementation	5.2

APPENDIX C – LIST OF LICENSEE DOCUMENTS REQUIRING WRITTEN NOTIFICATION

Document #	Document Title	Notification Requirements	L.C.
	Systems, and Components Classification Report		
RADIATION PROTECTION			
NK054-PLAN-01210-00034	Darlington New Nuclear Project (DNNP) Health and Safety Plan	When Implemented	7.1
NK054-REP-03420-00001	BWRX-300 Occupational Dose Assessment Report	When Implemented	7.1
CONVENTIONAL HEALTH AND SAFETY			
OPG-POL-0001	Health and Safety Policy	When Implemented	8.1
OPG-PROG-0005	Environment Health and Safety Managed Systems	When Implemented	8.1
NK054-PLAN-01210-00034	Darlington New Nuclear Project (DNNP) Health and Safety Plan	When Implemented	8.1
OPG-PROC-0126	Hazardous Materials Management	When Implemented	8.1
ENVIRONMENTAL PROTECTION			
N-STD-OP-0031	Monitoring of Nuclear and Hazardous Substances in Effluents	When Implemented	9.1
N-PROC-OP-0037	Environmental Approvals	When Implemented	9.1
OPG-POL-0021	Environmental Policy	When Implemented	9.1
OPG-PROG-0005	Environment Health and Safety Managed Systems	When Implemented	9.1
N-PROC-OP-0044	Contaminated Lands Management	When Implemented	9.1
N-STD-OP-0046	Groundwater Protection and Monitoring Program	When Implemented	9.1
OPG-PROC-0126	Hazardous Material Management	When Implemented	9.1

APPENDIX C – LIST OF LICENSEE DOCUMENTS REQUIRING WRITTEN NOTIFICATION

Document #	Document Title	Notification Requirements	L.C.
NK054-PLAN-07730-00014	Environmental Monitoring and Environmental Assessment Follow-Up for the Darlington New Nuclear Project	When Implemented	9.1
N-PROC-OP-0025	Management of the Environmental Monitoring Programs	When Implemented	9.1
NK38-REP-07701-00001	Darlington Nuclear Environmental Risk Assessment	When Implemented	9.1
EMERGENCY PREPAREDNESS AND RESPONSE			
N-PROG-RA-0001	Consolidated Nuclear Emergency Plan	Prior to Implementation	10.1
WASTE MANAGEMENT			
OPG-PROG-0005	Environment Health and Safety Managed Systems	When Implemented	11.1 9.1
OPG-STD-0156	Management of Waste and Other Environmentally Regulated Materials	When Implemented	11.1
W-PROG-WM-0003	Decommissioning Program	Prior to Implementation	11.2
NK054-PLAN-00960-00006	Preliminary Decommissioning Plan – DNNP – As-Built	Prior to Implementation	11.2
NK054-PLAN-00960-00007	Preliminary Decommissioning Plan – Darlington New Nuclear Project – End of Life	When Implemented (when changed, for notification only)	11.2
SECURITY			
N-PROG-RA-0011	Nuclear Security	Prior to Implementation	12.1
OPG-PROG-0042	Cyber Security	When Implemented	12.1

APPENDIX C – LIST OF LICENSEE DOCUMENTS REQUIRING WRITTEN NOTIFICATION

Document #	Document Title	Notification Requirements	L.C.
N-PROC-RA-0135	Cyber Security	When Implemented	12.1
SAFEGUARDS AND NON-PROLIFERATION			
N-PROC-RA-0136	OPG Safeguards and Nuclear Material Accountancy Requirements	When Implemented	13.1
N-PROG-RA-0015	Nuclear Safeguards	Prior to Implementation	13.1
SITE-SPECIFIC			
NK0054-REP-01210-00078	Darlington New Nuclear Project Commitments Report	Prior to Implementation	15.1
NK054-PLAN-07730-00014	Environmental Monitoring and Environmental Assessment Follow-up Plan for the Darlington New Nuclear Project	Prior to Implementation	15.2

APPENDIX C – LIST OF LICENSEE DOCUMENTS REQUIRING WRITTEN NOTIFICATION

APPENDIX D List of Documents Used as Guidance or Criteria

D.1 Other Codes or Standards Referenced in the LCH

Document #	Document Title	Version	L.C.
ANSI 56.8	Containment System Leakage Testing Requirements	2020	5.1
ASME BPVC	Boiler and Pressure Vessel Code	2021	5.2
ASME B31.1	Power Piping	2022	5.2
ASME B31.3	Process Piping Code	2022	5.2
ASME B31.5	Refrigeration Piping and Heat Transfer Components Code	2022	5.2
ANSI/ASME/ANS RA-S-1.1	Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications	2022	4.1
CSA N288.3.4	Performance Testing of Nuclear Air-Cleaning Systems at Nuclear Facilities	2013	9.1
CSA N288.1	Guidelines for Modelling Radionuclide Environmental Transport, Fate, and Exposure Associated with the Normal Operation of Nuclear Facilities	2020	9.1
CSA N290.17	Probabilistic Safety Assessment for Nuclear Power Plants	2023	4.1
CSA N1600	General Requirements for Nuclear Emergency Management Programs	2021	10.1
IAEA SSG-3	Development and Application of Level 1 Probabilistic Safety Assessments for Nuclear Power Plants	2010	4.1
IAEA SSG-4	Development and Application of Level 2 Probabilistic Safety Assessments for Nuclear Power Plants	2010	4.1
IAEA NSS-4	Technical Guidance: Engineering Safety Aspects of Nuclear Power Plants Against Sabotage	2007	12.1

Document #	Document Title	Version	L.C.
IAEA NSS-13	Recommendations: Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities	2011	12.1
IAEA NSS-17	Technical Guidance: Computer Security at Nuclear Facilities	2011	12.1
IEC 61513	Nuclear Power Plants: Instrumentation and Control Important to Safety – General Requirements for Systems	2011	5.1
IEC 60709	Nuclear Power Plants: Instrumentation and Control, and Electrical Power Systems Important to Safety – Separation	2018	5.1
NEI 00-01	Guidance for Post Fire Safe Shutdown Circuit Analysis	3	10.2

D.2 Other CNSC Documents Referenced in the LCH

Document #	Document Title	Version	L.C.	e-Doc #
REGDOC-1.1.2	Licence Application Guide: Licence to Construct a Reactor Facility	2	All	CNSC Website
REGDOC-2.2.4	Fitness for Duty Volume 1: Managing Worker Fatigue	1	2.1	CNSC Website
REGDOC-2.2.4	Fitness for Duty Volume 2: Managing Alcohol and Drug Use	2	2.1	CNSC Website
REGDOC-2.2.4	Fitness for Duty, Volume III: Nuclear Security Officer Medical, Physical, and Psychological Fitness	1	2.1	CNSC Website
REGDOC-2.6.2	Maintenance Programs for Nuclear Power Plants	1	3.1	CNSC Website
REGDOC-2.7.1	Radiation Protection	1	7.1	CNSC Website
REGDOC-2.7.2	Dosimetry, Volume I: Ascertaining Occupational Dose	1	7.1	CNSC Website

APPENDIX D – LIST OF DOCUMENTS USED AS GUIDANCE OR CRITERIA

Document #	Document Title	Version	L.C.	e-Doc #
REGDOC-2.9.2	Controlling Releases to the Environment	2024	9.1	CNSC Website
REGDOC-2.11	Framework for Radioactive Waste Management and Decommissioning in Canada	2	11.1 11.2	CNSC Website
REGDOC-3.1.1	Reporting Requirements for Nuclear Power Plants	3	3.2	CNSC Website

APPENDIX E Government of Canada Response to Joint Review Panel Report Recommendations

JRP Recommendations directed to OPG are documented and managed through the OPG *DNNP Commitments Report*. The corresponding DNNP Commitments Report reference numbers are included in the table below, where applicable. Where a JRP Recommendation is not directed to OPG, the Commitments Report column indicates this number is not applicable.

The JRP Recommendations span the lifecycle of the DNNP, with some Recommendations applicable at the site preparation, construction, and operation licence phases. All JRP Recommendations not directed to OPG are managed under the CNSC's regulatory program for DNNP.

For all JRP Recommendations, the GOC Response sets the criteria for how to meet the recommendations and by which accountable organisation. The GOC either accepted the recommendation as-is or accepted the intent of the recommendation with clarifications in their response. In some instances, the GOC response noted where recommendations were directed to other levels of government or clarified where statutory authority and powers rest.

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
1	The Panel understands that prior to construction, the Canadian Nuclear Safety Commission will determine whether this environmental assessment is applicable to the reactor technology selected by the Government of Ontario for the Project. Nevertheless, if the selected reactor technology is fundamentally different from the specific reactor technologies bounded by the Plant Parameter Envelope, the Panel recommends that a new environmental assessment be conducted.	The Government of Canada accepts the intent of this recommendation, but acknowledges that any RA under the CEAA will need to determine whether the future proposal by the proponent is fundamentally different from the specific reactor technologies assessed by the JRP and if a new EA is required under the CEAA.	N/A	Closed

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
2	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission require OPG to conduct a comprehensive soils characterization program. In particular, the potentially impacted soils in the areas OPG identifies as the spoils disposal area, cement plant area and asphalt storage area must be sampled to identify the nature and extent of potential contamination.	The Government of Canada accepts the recommendation to require OPG to conduct a comprehensive soils characterization program. The Government of Canada also notes that the recommended soils characterization program could also support future ecological risk assessment activities by OPG. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-3.6	Closed
3	The Panel recommends that the Canadian Nuclear Safety Commission require that as part of the Application for a Licence to Construct a reactor, OPG must undertake a formal quantitative cost-benefit analysis for cooling tower and once-through condenser cooling water systems, applying the principle of best available technology economically achievable. This analysis must take into account the fact that lake infill should not go beyond the two-metre depth contour and should include cooling tower plume abatement technology.	The Government of Canada accepts the intent of this recommendation to require OPG to conduct a formal quantitative cost-benefit analysis for cooling tower and once-through condenser cooling water systems, as recommended, but acknowledges that this analysis may be required earlier than indicated in the recommendation given the relationship between site layout and the choice of condenser cooling technology. Fisheries and Oceans Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The Government of Canada further acknowledges the connection of this Recommendation with Panel Recommendation #31 and as such notes that Fisheries and Oceans Canada will work with OPG to ensure through its regulatory process and conditions of authorization under the	D-C-1.1	Closed

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
		Fisheries Act that any Harmful Alteration, Disruption and Destruction (HADD) is limited to the 2 metre depth contour of Lake Ontario.		
4	The Panel recommends that the Canadian Nuclear Safety Commission exercise regulatory oversight to ensure that OPG complies with all municipal and provincial requirements and standards over the life of the Project. This is of particular importance because the conclusions of the Panel are based on the assumption that OPG will follow applicable laws and regulations at all jurisdictional levels.	The Government of Canada accepts this recommendation, however recognizes that it is the responsibility of provincial and municipal officials to ensure compliance with their own requirements and standards over the life of the Project.	N/A	Closed
5	To avoid any unnecessary environmental damage to the bluff at Raby Head and fish habitat, the Panel recommends that no bluff removal or lake infill occur during the site preparation stage, unless a reactor technology has been selected and there is certainty that the Project will proceed.	The Government of Canada accepts this recommendation to avoid any unnecessary environmental damage to the bluff at Raby Head and fish habitat as recommended. Fisheries and Oceans Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The Government of Canada further notes that authorization under the Fisheries Act will be required prior to any lake infill taking place, and confirms that Fisheries and Oceans Canada will work with OPG to ensure that as a condition of that authorization, that no lake infill occurs unless there is certainty that the Project will proceed and appropriate mitigation measures and habitat compensation have been implemented.	D-P-14.1 D-P-16.1 D-P-3.8	Open Open Open

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
6	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission require OPG to update its preliminary decommissioning plan for site preparation in accordance with the requirements of Canadian Standards Association (CSA) Standard N294-09. The OPG preliminary decommissioning plan for site preparation must incorporate the rehabilitation of the site to reflect the existing biodiversity in the event that the Project does not proceed beyond the site preparation phase. OPG shall prepare a detailed preliminary decommissioning plan once a reactor technology is chosen, to be updated as required by the Canadian Nuclear Safety Commission.	The Government of Canada accepts the intent of the recommendation to require OPG to maintain a preliminary decommissioning plan for site preparation in accordance with the requirements of CSA Standard N294-09, which provides direction on the decommissioning of licensed facilities and activities consistent with Canadian and international recommendations. The Government of Canada accepts the recommendation to require OPG to revise the preliminary decommissioning plan once a reactor technology is selected.	D-P-13.1	Closed
7	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission require that OPG establish a decommissioning financial guarantee to be reviewed as required by the Canadian Nuclear Safety Commission. Regarding the decommissioning financial guarantee for the site preparation stage, the Panel recommends that this financial guarantee contain sufficient funds for the rehabilitation of the site in the event the Project does not proceed beyond the site preparation stage.	The Government of Canada accepts the intent of this recommendation to require OPG to establish a financial guarantee for the site preparation stage, however, notes that the financial guarantee must be sufficient to cover the cost of decommissioning work outlined in the preliminary decommissioning plan referenced in Recommendation #6.	D-P-13.2	Closed
8	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission require OPG to develop a follow-up and adaptive management program for air contaminants such as Acrolein, NO2, SO2, SPM, PM2.5 and PM10, to the satisfaction of the Canadian Nuclear Safety Commission, Health Canada and Environment Canada. Additionally, the	The Government of Canada accepts this recommendation to require OPG to develop a follow-up and adaptive management program for air contaminants and a smog alert action plan. Health Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety	D-P-12.2 D-P-3.10	Closed Closed

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	Canadian Nuclear Safety Commission must require OPG to develop an action plan acceptable to Health Canada for days when there are air quality or smog alerts.	Commission, to assist in the implementation of this recommendation.		
9	The Panel recommends that the Canadian Nuclear Safety Commission, in collaboration with Health Canada, require OPG to develop and implement a detailed acoustic assessment for all scenarios evaluated. The predictions must be shared with potentially affected members of the public. The OPG Nuisance Effects Management Plan must include noise monitoring, a noise complaint response mechanism and best practices for activities that may occur outside of municipal noise curfew hours to reduce annoyance that the public may experience.	The Government of Canada accepts this recommendation to require OPG to develop and implement a detailed acoustic assessment. Health Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, to assist in the implementation of this recommendation.	D-P-3.2	Closed
10	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to undertake a detailed site geotechnical investigation prior to commencing site preparation activities. The geologic elements of this investigation should include, but not be limited to: • collection of site-wide information on soil physical properties; • determining the mechanical and dynamic properties of overburden material across the site; • mapping of geological structures to improve the understanding of the site geological structure model; • confirming the lack of karstic features in the local bedrock at the site; and	The Government of Canada accepts the intent of this recommendation to require OPG to undertake a detailed site geotechnical investigation, however, notes that this investigation may be performed concurrently with site preparation activities. Natural Resources Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-9.1 D-P-9.2	Closed Closed

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	• confirming the conclusions reached concerning the liquefaction potential in underlying granular materials.			
11	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to develop and implement a follow-up program for soil quality during all stages of the Project.	The Government of Canada accepts this recommendation to require OPG to develop and implement a follow-up program for soil quality. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-12.6	Closed
12	The Panel recommends that before in-water works are initiated, the Canadian Nuclear Safety Commission require OPG to collect water and sediment quality data for any future embayment area that may be formed as a consequence of shoreline modifications in the vicinity of the outlet of Darlington Creek. This data should serve as the reference information for the proponent's post-construction commitment to conduct water and sediment quality monitoring of the embayment area.	The Government of Canada accepts this recommendation to require OPG to collect water and sediment quality data for any future embayment area. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The Government of Canada notes that authorization under the Fisheries Act will be required prior to in-water works. Prior to the issuance of an authorization, Fisheries and Oceans Canada will require a water and sediment quality monitoring program. This program is required to assess whether OPG continues to meet the intent of section 36 of the Fisheries Act.	D-P-12.3	Open

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
13	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to collect and assess water quality data for a comprehensive number of shoreline and offshore locations in the site study area prior to commencing in-water works. This data should be used to establish a reference for follow-up monitoring.	The Government of Canada accepts the intent of this recommendation to require OPG to collect and assess water quality data for a comprehensive number of shoreline and offshore locations in the site study area prior to commencing in-water works, and would further support the collection of sediment quality data as part of a comprehensive program. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The Government of Canada notes that authorization under the Fisheries Act will be required prior to in-water works. Prior to the issuance of an authorization, Fisheries and Oceans Canada will require a water and sediment quality monitoring program. This program is required to assess whether OPG continues to meet the intent of section 36 of the Fisheries Act.	D-P-12.3	Open
14	The Panel recommends that following the selection of a reactor technology for the Project, the Canadian Nuclear Safety Commission require OPG to conduct a detailed assessment of predicted effluent releases from the Project. The assessment should include but not be limited to effluent quantity, concentration, points of release and a description of effluent treatment, including demonstration that the chosen option has been designed to achieve best available treatment technology and techniques economically	The Government of Canada accepts this recommendation to require OPG to conduct a detailed assessment of predicted effluent releases from the Project, as recommended. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-C-2.1 D-C-4.1 D-P-12.9	Open Open Closed

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	achievable. The Canadian Nuclear Safety Commission shall also require OPG to conduct a risk assessment on the proposed residual releases to determine whether additional mitigation measures may be necessary.			
15	The Panel recommends that following the start of operation of the reactors, the Canadian Nuclear Safety Commission require OPG to conduct monitoring of ambient water and sediment quality in the receiving waters to ensure that effects from effluent discharges are consistent with predictions made in the environmental impact statement and with those made during the detailed design phase.	The Government of Canada accepts this recommendation to require OPG to conduct monitoring of ambient water and sediment quality in the receiving waters as recommended. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The Government of Canada notes that authorization under the Fisheries Act will be required prior to in-water works. Prior to the issuance of an authorization, Fisheries and Oceans Canada will require a water and sediment quality monitoring program. This program is required to assess whether OPG continues to meet the intent of section 36 of the Fisheries Act.	D-P-12.3	Open
16	The Panel recommends that prior to the start of construction, the Canadian Nuclear Safety Commission require the proponent to establish toxicity testing criteria and provide the test methodology and test frequency that will be used to confirm that stormwater discharges from the new nuclear site comply with requirements in the Fisheries Act.	The Government of Canada accepts the intent of this recommendation to require the proponent to establish toxicity testing criteria and provide the test methodology and test frequency for stormwater. The Government of Canada would additionally support the application of this recommended testing for process effluents. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety	D-C-2.1 D-P-3.4	Open Closed

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
		Commission, upon request, to assist in the implementation of this recommendation.		
17	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to provide an assessment of the ingress and transport of contaminants in groundwater on site during successive phases of the Project as part of the Application for a Licence to Construct. This assessment shall include consideration of the impact of wet and dry deposition of all contaminants of potential concern and gaseous emissions on groundwater quality. OPG shall conduct enhanced groundwater and contaminant transport modelling for the assessment and expand the modelling to cover the effects of future dewatering and expansion activities at the St. Marys Cement quarry on the Project.	The Government of Canada accepts this recommendation to require OPG to provide an assessment of the ingress and transport of contaminants in groundwater on site during successive phases of the Project as recommended. For clarity, the Government of Canada would support enhanced groundwater and contaminant transport modelling extending to appropriate model boundaries, which may not necessarily be site boundaries. Natural Resources Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-C-2.1	Open
			D-C-4.1	Open
			D-C-5.1	Open
			D-C-6.1	Open
			D-P-12.6	Closed
18	The Panel recommends that based on the groundwater and contaminant transport modelling results, the Canadian Nuclear Safety Commission require OPG to expand the Radiological Environmental Monitoring Program. This program shall include relevant residential and private groundwater well quality data in the local study area that are not captured by the current program, especially where the modelling results identify potential critical groups based on current or future potential use of groundwater.	The Government of Canada accepts this recommendation to require OPG to update the Radiological Environmental Monitoring Program, based on the groundwater and contaminant transport modelling results. Natural Resources Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-C-6.1	Open

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
19	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to expand the scope of the groundwater monitoring program to monitor transitions in groundwater flows that may arise as a consequence of grade changes during the site preparation and construction phases of the Project. The design of the grade changes should guide the determination of the required monitoring locations, frequency of monitoring and the required duration of the program for the period of transition to stable conditions following the completion of construction and the initial period of operation.	The Government of Canada accepts this recommendation to require OPG to expand the scope of the groundwater monitoring program to monitor transitions in groundwater flows that may arise as a consequence of grade changes during the site preparation and construction phases of the Project. Natural Resources Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-12.6	Closed
20	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to perform a thorough evaluation of site layout opportunities before site preparation activities begin, in order to minimize the overall effects on the terrestrial and aquatic environments and maximize the opportunity for quality terrestrial habitat rehabilitation.	The Government of Canada accepts this recommendation to require OPG to perform a thorough evaluation of site layout opportunities before site preparation activities begin, as recommended. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. As part of the conditions of authorization under the Fisheries Act, Fisheries and Oceans Canada also commits to working with OPG to ensure overall impacts to aquatic habitat are minimized with appropriate mitigation and habitat compensation.	D-P-14.1 D-P-3.7	Open Closed
21	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to compensate for the loss of ponds, like-for-like, preferably in the site study area. The Panel also recommends that the Canadian Nuclear Safety Commission require OPG to use best management practices to prevent or	The Government of Canada accepts the recommendation to require OPG to use best management practices to prevent or minimize the potential runoff of sediment and other contaminants. The Government of Canada accepts the intent of compensating for the loss	D-P-3.7	Closed

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	minimize the potential runoff of sediment and other contaminants into wildlife habitat associated with Coot's Pond during site preparation and construction phases.	of ponds, but would also support the Canadian Nuclear Safety Commission requiring OPG to design compensation ponds that maximize ecological function, and not necessarily limited to "like-for-like". Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.		
22	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to develop a follow-up program for insects, amphibians and reptiles, and mammal species and communities to ensure that proposed mitigation measures are effective.	The Government of Canada accepts the intent of this recommendation to require OPG to develop a follow-up program for insects, amphibians and reptiles, and mammal species and communities as appropriate, and would support a focus for this follow-up program on species at risk and the use of this follow-up program to verify the conclusions of the Ecological Risk Assessment. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-12.5	Closed
23	The Panel recommends that Environment Canada collaborate with OPG to develop and implement a follow-up program to confirm the effectiveness of OPG's proposed mitigation measures for bird communities should natural draft cooling towers be chosen for the condenser cooling system.	The Government of Canada accepts the intent of this recommendation to collaborate with OPG to develop such a follow-up program for bird communities, and would further support the consideration of potential impacts from habitat disturbance, as well as from bird collision impacts, in the scope of that program. The Government of Canada acknowledges that the Canadian Nuclear Safety Commission has the statutory authority and powers to ensure such a follow-up program is implemented through future	D-P-12.5	Closed

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
		licensing under the Nuclear Safety and Control Act. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.		
24	The Panel recommends that during the site preparation stage, Environment Canada shall ensure that OPG not undertake habitat destruction or disruption between the period of May 1 and July 31 of any year to minimize effects to breeding migratory birds.	The Government of Canada accepts the intent of this recommendation to avoid habitat destruction or disruption between the period of May 1 and July 31 of any year to protect most bird species' nesting activities. However, Environment Canada does not have the ability to ensure that OPG conducts all of its land clearing activities when migratory bird nests are not active since the department does not have a regulatory permitting ability to bind the proponent. The Government of Canada acknowledges that the Canadian Nuclear Safety Commission has the statutory authority and powers to address this recommendation through future licensing under the Nuclear Safety and Control Act. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-3.7	Closed
25	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to conduct more sampling to confirm the presence of Least Bittern before site preparation activities begin. The Panel recommends that the Canadian Nuclear Safety Commission require OPG to develop and implement a management plan for the species at risk that are known to occur on site. The plan	The Government of Canada accepts this recommendation to require OPG to conduct more sampling to confirm the presence of Least Bittern and to develop and implement a management plan for species at risk, as may be appropriate. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety	D-P-12.5 D-P-3.7	Closed Closed

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	should consider the resilience of some of the species and the possibility of off-site compensation.	Commission, upon request, to assist in the implementation of this recommendation.		
26	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to develop a comprehensive assessment of hazardous substance releases and the required management practices for hazardous chemicals on site, in accordance with the Canadian Environmental Protection Act, once a reactor technology has been chosen.	The Government of Canada accepts this recommendation to require OPG to develop a comprehensive assessment of hazardous substance releases and the required management practices for hazardous chemicals on site once a reactor technology has been chosen. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-C-2.1	Open
			D-C-5.1	Open
			D-P-12.9	Closed
			D-P-3.6	Closed
27	The Panel recommends that prior to any destruction of the Bank Swallow habitat, the Canadian Nuclear Safety Commission require OPG to implement all of its proposed Bank Swallow mitigation options, including: • the acquisition of off-site nesting habitat; • the construction of artificial Bank Swallow nest habitat with the capacity to maintain a population which is at least equal to the number of breeding pairs currently supported by the bluff and as close to the original bluff site as possible; and • the implementation of an adaptive management approach in the Bank Swallow mitigation plan, with the inclusion of a threshold of loss to be established in consultation with all stakeholders before any habitat destruction takes place.	The Government of Canada accepts the intent of this recommendation to require OPG to implement the identified Bank Swallow mitigation measures using an adaptive management approach, and would support determining required mitigation based on reasonable estimates of actual burrow loss. The Government of Canada expects that the acquisition of offsite nesting habitat should only be necessary if follow-up monitoring shows that onsite mitigation is unsuccessful, and notes that onsite mitigation may also include the enhancement of potential natural nesting sites within the Site Study Area. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-3.8	Open
28			D-P-12.4	Open

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	The Panel recommends that Fisheries and Oceans Canada require OPG to continue conducting adult fish community surveys in the site study area and reference locations on an ongoing basis. These surveys shall be used to confirm that the results of 2009 gillnetting and 1998 shoreline electrofishing reported by OPG, and the additional data collected in 2010 and 2011, are representative of existing conditions, taking into account natural year-to-year variability. Specific attention should be paid to baseline gillnetting monitoring in spring to verify the findings on fish spatial distribution and relatively high native fish species abundance in the embayment area, such as white sucker and round whitefish. The shoreline electrofishing habitat use study is needed to establish the contemporary baseline for later use to test for effects of lake infill armouring, if employed, and the effectiveness of mitigation.	The Government of Canada accepts this recommendation. Fisheries and Oceans Canada will work with Environment Canada, the Canadian Nuclear Safety Commission, the Ontario Ministry of Natural Resources and OPG to develop the details of an ongoing fisheries monitoring program which will be included as a condition of a Fisheries Act authorization.	D-P-15.1	Closed
29	The Panel recommends that Fisheries and Oceans Canada require OPG to continue the research element of the proposed Round Whitefish Action Plan for the specific purpose of better defining the baseline condition, including the population structure, genome and geographic distribution of the round whitefish population as a basis from which to develop testable predictions of effects, including cumulative effects.	The Government of Canada accepts this recommendation. Fisheries and Oceans Canada will work with Environment Canada, Canadian Nuclear Safety Commission, Ontario Ministry of Natural Resources and OPG to develop and finalize the Round Whitefish Action Plan. This plan, as a condition of a Fisheries Act authorization, will form part of the ongoing monitoring program and feed into an adaptive management plan to protect the round whitefish population into the future.	D-P-12.4 D-P-15.1	Open Closed

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
30	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to the construction of in-water structures, Fisheries and Oceans Canada require OPG to conduct: • additional impingement sampling at the existing Darlington Nuclear Generating Station to verify the 2007 results and deal with inter-year fish abundance variability and sample design inadequacies; and • additional entrainment sampling at the existing Darlington Nuclear Generating Station to better establish the current conditions. The program should be designed to guard against a detection limit bias by including in the analysis of entrainment losses those fish species whose larvae and eggs are captured in larval tow surveys for the seasonal period of the year in which they occur. A statistical optimization analysis will be needed to determine if there is a cost-effective entrainment survey design for round whitefish larvae.	The Government of Canada accepts this recommendation. Fisheries and Oceans Canada will work with the Canadian Nuclear Safety Commission, and the Ontario Ministry of Natural Resources to develop an impingement and entrainment sampling program. The Government of Canada would also like to note that authorization under the Fisheries Act will be required prior to any lake infill taking place and commits that Fisheries and Oceans Canada will work with OPG to ensure that the impingement and entrainment sampling program is developed and implemented as a condition of that authorization.	D-C-1.2 D-P-12.4 D-P-15.1	Open Open Closed
31	Irrespective of the condenser cooling system chosen for the Project, the Panel recommends that Fisheries and Oceans Canada not permit OPG to infill beyond the two-metre depth contour in Lake Ontario.	The Government of Canada accepts the intent of this recommendation. Fisheries and Oceans Canada will work with OPG to ensure that the HADD of fish habitat associated with the proposed lake infill is limited to the area within the two-metre depth contour of Lake Ontario. The extent of the HADD as well as appropriate mitigation and habitat compensation will be included in the conditions of authorization under the Fisheries Act.	D-C-1.1 D-P-14.1 D-P-16.1	Closed Open Open

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
32	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that Fisheries and Oceans Canada require OPG to mitigate the risk of adverse effects from operation, including impingement, entrainment and thermal excursions and plumes, by locating the system intake and diffuser structures in water beyond the nearshore habitat zone. Furthermore, OPG must evaluate other mitigative technologies for the system intake, such as live fish return systems and acoustic deterrents.	The Government of Canada accepts this recommendation. Fisheries and Oceans Canada will work with Environment Canada and the Canadian Nuclear Safety Commission to determine the appropriate location for the intake and diffuser structures, and to evaluate other mitigation options for both the intake and the diffuser structures, in order to mitigate adverse effects. Fisheries and Oceans Canada will work with OPG to ensure implementation through its regulatory process and conditions of authorization under the Fisheries Act.	D-C-1.2	Open
33	The Panel recommends that Fisheries and Oceans Canada require OPG to conduct an impingement and entrainment follow-up program at the existing Darlington Nuclear Generating Station and the Project site to confirm the prediction of adverse effects, including cumulative effects, and the effectiveness of mitigation. For future entrainment sampling for round whitefish, a statistical probability analysis will be needed to determine if unbiased and precise sample results can be produced.	The Government of Canada accepts this recommendation. Fisheries and Oceans Canada will work with the Canadian Nuclear Safety Commission and Ontario Power Generation to develop an impingement and entrainment study on the existing Darlington Nuclear Generating Station and at the proposed Project site to confirm predicted adverse effects and will further ensure implementation through its regulatory process and conditions of authorization under the Fisheries Act.	D-P-12.4	Open
34	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to construction, Environment Canada ensure that enhanced resolution thermal plume modeling is conducted by OPG, taking into account possible future climate change effects. Fisheries and Oceans Canada shall ensure that the results of the modeling are incorporated into the design of the outfall diffuser and the evaluation of alternative locations for the	The Government of Canada accepts the intent of this recommendation. Environment Canada is committed to reviewing the information provided by OPG, and will rely on Fisheries and Oceans Canada authorization for a HADD associated with the intake or outfall to ensure that OPG undertakes this modelling. Fisheries and Oceans Canada will work with Environment Canada, and the Canadian Nuclear Safety Commission to incorporate the	D-C-1.2 D-P-12.4	Open Open

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	placement of the intake and the diffuser of the proposed condenser cooling water system.	results from the thermal plume modeling into the determination of the appropriate location for the intake and diffuser structures to mitigate adverse effects. Fisheries and Oceans Canada will ensure implementation through conditions of a Fisheries Act authorization.		
35	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to operation, the Canadian Nuclear Safety Commission require OPG to include the following in the surface water risk assessment: • the surface combined thermal and contaminant plume; and • the physical displacement effect of altered lake currents as a hazardous pulse exposure to fish species whose larvae passively drift through the area, such as lake herring, lake whitefish, emerald shiner and yellow perch. If the risk assessment result predicts a potential hazard then the Canadian Nuclear Safety Commission shall convene a follow-up monitoring scoping workshop with Environment Canada, Fisheries and Oceans Canada and any other relevant authorities to develop an action plan.	The Government of Canada accepts this recommendation to require OPG to update a comprehensive surface water risk assessment as recommended, however would clarify that an assessment of the combined thermal and contaminant plume should consider not only the surface area of the plume, but its vertical extent as well. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the design of the surface water risk assessment and any subsequent action plan development.	D-C-1.2	Open
			D-P-12.3	Open
			D-P-12.4	Open
36	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that during operation, the Canadian Nuclear Safety Commission require OPG to undertake adult fish monitoring of large-bodied and small-bodied fish to confirm the effectiveness of mitigation measures and verify the predictions of no adverse thermal and physical diffuser jet effects.	The Government of Canada accepts this recommendation to require OPG to undertake adult fish monitoring to confirm the effectiveness of mitigation measures and effect predictions. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation	D-C-1.2	Open
			D-P-12.4	Open

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
		of this recommendation. Fisheries and Oceans Canada is committed to working with OPG to develop their fish and fish habitat monitoring and follow-up program and ensuring implementation through conditions of authorization under the Fisheries Act.		
37	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to determine the total area of permanent aquatic effects from the following, to properly scale mitigation and scope follow-up monitoring: • § the thermal plume + 2°C above ambient temperature; • § the mixing zone and surface plume contaminants; • physical displacements from altered lake currents; and • infill and construction losses and modifications.	The Government of Canada accepts the intent of this recommendation to require OPG to determine the total area of permanent aquatic effects from identified impacts. The Government of Canada would further support inclusion of cumulative effects assessment in this assessment, including the effects of impingement and entrainment and climate change. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. Further, Fisheries and Oceans Canada is committed to working with the Canadian Nuclear Safety Commission and OPG to ensure that any permanent aquatic habitat effects are mitigated and appropriate habitat compensation is developed and implemented as a condition of any Fisheries Act authorization.	D-C-1.2	Open
			D-P-12.4	Open
38	The Panel recommends that the Canadian Nuclear Safety Commission require that the geotechnical and seismic hazard elements of the detailed site geotechnical investigation to be performed by OPG include, but not be limited to:	The Government of Canada accepts the intent of this recommendation to require OPG's detailed site investigation to include the noted geotechnical and seismic hazard elements, however, notes that this investigation may be	D-O-3.1	Open
			D-P-9.1	Closed
			D-P-9.3	Open
			D-P-9.4	Open

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	• Prior to site preparation: ○ demonstration that there are no undesirable subsurface conditions at the Project site. The overall site liquefaction potential shall be assessed with the site investigation data; and ○ confirmation of the absence of paleoseismologic features at the site and, if present, further assessment to reduce the overall uncertainty in the seismic hazard assessment during the design of the Project must be conducted. • During site preparation and/or prior to construction: ○ verification and confirmation of the absence of surface faulting in the overburden and bedrock at the site. • Prior to construction: ○ verification of the stability of the cut slopes and dyke slopes under both static and dynamic loads with site/Project-specific data during the design of the cut slopes and dykes or before their construction; ○ assessment of potential liquefaction of the northeast waste stockpile by using the data obtained from the pile itself upon completion of site preparation; ○ measurement of the shear strength of the overburden materials and the dynamic properties of both overburden and sedimentary rocks to confirm the site	performed concurrently with site preparation activities. Natural Resources Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-9.5	Open

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	conditions and to perform soil-structure interaction analysis if necessary; ○ assessment of the potential settlement in the quaternary deposits due to the groundwater drawdown caused by future St. Marys Cement quarry activities; and ○ assessment of the effect of the potential settlement on buried infrastructures in the deposits during the design of these infrastructures. • Prior to operation: ○ development and implementation of a monitoring program for the Phase 4 St. Marys Cement blasting operations to confirm that the maximum peak ground velocity at the boundary between the Darlington and St. Marys Cement properties is below the proposed limit of three millimetres per second (mm/s).			
39	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to prepare a contingency plan for the construction, operation and decommissioning Project stages to account for uncertainties associated with flooding and other extreme weather hazards. OPG shall conduct localized climate change modelling to confirm its conclusion of a low impact of climate change. A margin/bound of changes to key parameters, such as intensity of extreme weather events, needs to be established to the satisfaction of the Canadian Nuclear Safety Commission. These parameters can be incorporated into hydrological designs leading up to an	The Government of Canada accepts this recommendation to require OPG to prepare a contingency plan to account for uncertainties associated with flooding, drought and other extreme weather hazards, as recommended. The Government of Canada accepts the intent of the recommendation to conduct localized climate change modelling; however, if OPG uses reputable published studies to evaluate the anticipated impact of climate change for the Project area, localized climate change modelling may not be necessary. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear	D-C-7.1	Open

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	application to construct a reactor, as well as measures for flood protection. OPG must also conduct a drought analysis and incorporate any additional required mitigation/design modifications, to the satisfaction of the Canadian Nuclear Safety Commission, as part of a Licence to Construct a reactor.	Safety Commission, upon request, to assist in the implementation of this recommendation.		
40	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to: • establish an adaptive management program for algal hazard to the Project cooling water system intake that includes the setup of thresholds for further actions; and • factor the algal hazard assessment into a more detailed biological evaluation of moving the intake and diffuser deeper offshore as part of the detailed siting studies and the cost-benefit analysis of the cooling system.	The Government of Canada accepts this recommendation to require OPG to establish an adaptive management program for algal hazards to the cooling water system intake, and factor that assessment into planned siting studies and cost-benefit analyses. Fisheries and Oceans Canada and Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-C-1.2 D-P-12.4	Open Open
41	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission coordinate discussions with OPG and key stakeholders on the effects of the Project on housing supply and demand, community recreational facilities and programs, services and infrastructure as well as additional measures to help deal with the pressures on these community assets.	The Government of Canada accepts the intent of this recommendation for the CNSC to initiate discussions with OPG and key stakeholders, however, notes that these discussions may occur concurrently with site preparation activities.	D-P-17.1	Closed

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
42	The Panel recommends that on an ongoing basis, OPG pursue its strategy to ensure that Aboriginal students can benefit from the permanent job opportunities that will be available during the lifetime of the Project. In this regard, OPG should collaborate with various secondary and post-secondary education institutions as well as Aboriginal groups to ensure that such programs would be successful.	The Government of Canada supports this proposal and notes that such programs are consistent with OPG's presentation to the Panel on Aboriginal Interests on March 28, 2011 and with OPG's Aboriginal Relations Policy.	D-P-17.1	Closed
43	The Panel recommends that the Canadian Nuclear Safety Commission engage appropriate stakeholders, including OPG, Emergency Management Ontario, municipal governments and the Government of Ontario to develop a policy for land use around nuclear generating stations.	The Government of Canada accepts this recommendation for the Canadian Nuclear Safety Commission to engage appropriate stakeholders in developing policy for land use around nuclear generating stations.	D-P-17.1	Closed
44	The Panel recommends that the Government of Ontario take appropriate measures to prevent sensitive and residential development within three kilometres of the site boundary.	This recommendation was directed to the Government of Ontario.	N/A	Closed
45	The Panel recommends that the Municipality of Clarington prevent, for the lifetime of the nuclear facility, the establishment of sensitive public facilities such as school, hospitals and residences for vulnerable clienteles within the three kilometre zone around the site boundary.	This recommendation was directed to the Municipality of Clarington.	N/A	Closed
46	Given that a severe accident may have consequences beyond the three and 10-kilometre zones evaluated by OPG, the Panel recommends that the Government of Ontario, on an ongoing basis, review the emergency planning zones and the emergency preparedness and response measures, as defined in the Provincial Nuclear Emergency	This recommendation was directed to the Government of Ontario.	N/A	Closed

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	Response Plan (PNERP), to protect human health and safety.			
47	The Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission ensure the OPG Traffic Management Plan addresses the following: • contingency plans to address the possibility that the assumed road improvements do not occur; • consideration of the effect of truck traffic associated with excavated material disposal on traffic operations and safety; • further analysis of queuing potential onto Highway 401; and • consideration of a wider range of mitigation measures, such as transportation-demand management, transit service provisions and geometric improvements at the Highway 401/Waverley Road interchange.	The Government of Canada accepts this recommendation to require that OPG's Traffic Management Plan consider elements related to contingency plans, truck traffic, queuing potential on Highway 401 and additional mitigation measures.	D-P-10.1	Closed
48	In consideration of public safety, the Panel recommends that prior to site preparation, the Canadian Nuclear Safety Commission coordinate a committee of federal, provincial and municipal transport authorities to review the need for road development and modifications.	The Government of Canada accepts the intent of this recommendation to support a federal, provincial and municipal review of the need for road development and modifications, however, notes that this review may be performed concurrently with site preparation activities.	N/A	Not Initiated

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
49	The Panel recommends that prior to construction, Transport Canada ensure that OPG undertake additional quantitative analysis, including collision frequencies and rail crossing exposure indices, and monitor the potential effects and need for mitigation associated with the Project.	The Government of Canada accepts the intent of this recommendation to require OPG to undertake additional rail safety studies, monitor the potential effects and determine the need for mitigation. The Railway Safety Act (RSA) places crossing safety responsibilities on the Railways and the Road Authorities. This policy reflects the objectives of Section 3 of the RSA. Ultimately, the Railway and the Road Authority must take the responsibility of performing the crossing assessment. Transport Canada is committed to provide assistance and expertise to the interested parties if required during the risk assessment and in the evaluation of any proposed mitigation measures.	D-C-3.1	Open
50	The Panel recommends that prior to construction, Transport Canada require OPG to conduct a risk assessment, jointly with Canadian National Railway, that includes: • an assessment of the risks associated with a derailment or other rail incident that could affect the Project; • an analysis of the risks associated with a security threat, such as a bomb being placed on a train running on the tracks that bisect the Project; • a comparative evaluation of the effectiveness of various mitigation measures or combination of measures (e.g., blast wall, retaining wall, recessed tracks, berm and	The Government of Canada recognizes that the CNSC has the statutory authority and powers to address this recommendation through future regulatory activities under the Nuclear Safety and Control Act. Transport Canada is committed to provide assistance and expertise to the Canadian Nuclear Safety Commission and other parties if required during the risk assessment and in the evaluation of any proposed mitigation measures.	D-C-3.1	Open

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
	railway speed restrictions within the vicinity of the site); • a determination of the design criteria necessary to ensure the effectiveness of these measures (e.g., the appropriate height, strength, material and design of a blast wall); and • a critical analysis to confirm that these measures, when properly designed and implemented, would be sufficient to provide protection to the Project site in the event of a derailment at full speed or other adverse event.			
51	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to construction, Transport Canada work with OPG to develop a follow-up program to verify the accuracy of the prediction of no significant adverse effects to boating safety from the establishment of an increased prohibitive zone. OPG must also develop an adaptive management program, if required, to mitigate potential effects to small watercraft.	The Government of Canada accepts the intent of this recommendation. Transport Canada will provide guidance and support to OPG to assist in their development of a follow-up program to confirm that boating safety will not be significantly adversely affected. If an adaptive management program is required, Transport Canada can provide support and expertise to OPG in its development.	D-P-12.8	Closed
52	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to make provisions for on-site storage of all used fuel for the duration of the Project, in the event that a suitable off-site solution for the long-term management for used fuel waste is not found.	The Government of Canada accepts the intent of this recommendation to the extent that it is the responsibility of waste owners for managing and funding the safe and secure operation of their own wastes. Canada's 1996 Radioactive Waste Policy Framework states that the owners of radioactive waste are responsible for developing and implementing solutions, including all costs associated with safely and securely managing their wastes.	D-C-9.1	Open

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
53	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to make provisions for on-site storage of all of low and intermediate-level radioactive waste for the duration of the Project, in the event that a suitable off-site solution for the long-term management for this waste is not approved.	The Government of Canada accepts the intent of this recommendation to the extent that it is the responsibility of waste owners for managing and funding the safe and secure operation of their own wastes, in accordance with CNSC's regulatory requirements. Canada's 1996 Radioactive Waste Policy Framework states that the owners of radioactive waste are responsible for developing and implementing solutions, including all costs associated with safely and securely managing their wastes.	D-C-9.1	Open
54	The Panel recommends that during operation, the Canadian Nuclear Safety Commission require OPG to implement measures to manage releases from the Project to avoid tritium in drinking water levels exceeding a running annual average of 20 Becquerels per litre at drinking water supply plants in the regional study area.	The Government of Canada accepts the intent of this recommendation to safeguard drinking water; however, it notes that any proposed limits should be consistent with the tritium standards put in place by the relevant regulatory authorities. Health Canada's Guidelines for Canadian Drinking Water Quality, based on the recommendations of the International Commission on Radiological Protection and the World Health Organization, establish a safe consumption guideline limit of 7,000 Bq/L for tritium in drinking water. This limit has been accepted as a standard by the Province of Ontario. Since water quality is primarily a provincial responsibility in Canada, the provinces may adopt federal guidelines, or may establish their own criteria. The Government of Canada further notes that the Canadian Nuclear Safety Commission regulates potential releases of tritium to the environment from nuclear facilities by imposing regulatory limits as well as	D-C-4.1	Open

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
		precautionary action levels for tritium releases into air or water on a licence-specific basis. These limits are set with a goal to protect human health. The Canadian Nuclear Safety Commission's Radiation Protection Regulations require that releases are kept "As Low As Reasonably Achievable" (ALARA), social and economic factors taken into account.		

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
55	The Panel recommends that Health Canada and the Canadian Nuclear Safety Commission continue to participate in international studies seeking to identify long-term health effects of low-level radiation exposures, and to identify if there is a need for revision of limits specified in the Radiation Protection Regulations.	The Government of Canada accepts the recommendation to continue its participation in international studies seeking to identify long-term health effects of low-level radiation exposures. The Government of Canada accepts the intent of the recommendation to identify if there is a need for revision of limits specified in the Radiation Protection Regulations based on the results of international studies. Health Canada and the Canadian Nuclear Safety Commission will continue to participate in international studies dealing with long-term health effects of low-level radiation exposures; participate in committees/working groups with relevant international organizations; and, regularly review the reports published by these international groups for developments in radiation protection. Health Canada can provide expertise to the Canadian Nuclear Safety Commission, upon request, in support of the review of limits specified in the Radiation Protection Regulations.	N/A	Closed
56	The Panel recommends that over the life of the Project, the Canadian Nuclear Safety Commission require OPG to conduct ambient air monitoring in the local study area on an ongoing basis to ensure that air quality remains at levels that are not likely to cause adverse effects to human health.	The Government of Canada accepts this recommendation to require OPG to conduct ambient air monitoring to ensure that air quality is not likely to cause adverse effects to human health. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-P-12.2	Closed

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
57	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to undertake an assessment of the off-site effects of a severe accident. The assessment should determine if the off-site health and environmental effects considered in this environmental assessment bound the effects that could arise in the case of the selected reactor technology.	The Government of Canada accepts this recommendation to require OPG to undertake an assessment of the off-site effects of a severe accident. Environment Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation.	D-C-3.1	Open
58	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission confirm that dose acceptance criteria specified in RD-337 at the reactor site boundary—in the cases of design basis accidents for the Project's selected reactor technology—will be met.	The Government of Canada accepts this recommendation to ask the Canadian Nuclear Safety Commission to confirm that dose acceptance criteria specified in RD-337 will be met.	D-C-3.1	Open
59	The Panel recommends that the Municipality of Clarington manage development in the vicinity of the Project site to ensure that there is no deterioration in the capacity to evacuate members of the public for the protection of human health and safety.	This recommendation was directed to the Municipality of Clarington.	N/A	Closed
60	The Panel recommends that prior to construction, the Government of Canada review the adequacy of the provisions for nuclear liability insurance. This review must include information from OPG and the Region of Durham regarding the likely economic effects of a severe accident at the Darlington Nuclear site where there is a requirement for relocation, restriction of use and remediation of a sector of the regional study area.	The Government of Canada accepts the intent of this recommendation, that the Government of Canada review the adequacy of the provisions for nuclear liability insurance. In bringing forward modernized nuclear civil liability legislation to replace the current Nuclear Liability Act, the Government of Canada will continue to review the adequacy of the provisions for nuclear liability insurance, taking into consideration the risk of Canadian nuclear installations and other relevant factors.	N/A	Closed

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
61	The Panel recommends that during operation, the Canadian Nuclear Safety Commission require OPG to monitor aquatic habitat and biota for potential cumulative effects from the thermal loading and contaminant plume of the discharge structures of the existing Darlington Nuclear Generating Station and the Project.	The Government of Canada accepts this recommendation to require OPG to monitor aquatic habitat and biota for potential cumulative effects from the thermal loading and contaminant plume. Environment Canada and Fisheries and Oceans Canada can provide available scientific and technical expertise to the Canadian Nuclear Safety Commission, upon request, to assist in the implementation of this recommendation. The proponent will also be required to undertake an aquatic monitoring program as a condition of any Fisheries Act authorization.	D-P-12.4	Open
62	The Panel recommends that prior to site preparation, Environment Canada evaluate the need for additional air quality monitoring stations in the local study area to monitor cumulative effects on air quality.	The Government of Canada accepts this recommendation to evaluate the need for additional air quality monitoring stations in the local study area to monitor cumulative effects on air quality. If this evaluation finds that additional air quality monitoring stations in the local study area are required, the Government of Canada acknowledges that the Canadian Nuclear Safety Commission has the statutory authority and powers to address the findings of this recommendation through future licensing under the Nuclear Safety and Control Act.	N/A	Closed
63	The Panel recommends that prior to construction, the Canadian Nuclear Safety Commission require OPG to evaluate the cumulative effect of a common-cause severe accident involving all of the nuclear reactors in the site study area to determine if further emergency planning measures are required.	The Government of Canada accepts the intent of this recommendation to require OPG to evaluate the cumulative effect of a common-cause severe accident in the site study area. The Government of Canada notes that the CNSC has established a task force to examine the lessons learned from the Japan Earthquake and will evaluate the operational, technical	D-C-3.1	Open

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
		and regulatory implications of the nuclear event in Japan in relation to Canadian nuclear power plants.		
64	The Panel recommends that the Canadian Environmental Assessment Agency revise the Canadian Environmental Assessment Agency Cumulative Effects Practitioner's Guide to specifically include consideration of accident and malfunction scenarios.	The Government of Canada accepts this recommendation. The Canadian Environmental Assessment Agency is in the process of updating its suite of instruments in support of cumulative effects assessment under the CEAA. An operational policy statement, scheduled for completion by December 2012, will provide core guidance to practitioners and include the consideration of accidents and malfunctions.	N/A	Closed
65	The Panel recommends that the Government of Canada make it a priority to invest in developing solutions for long-term management of used nuclear fuel, including storage, disposal, reprocessing and re-use.	The Government of Canada accepts the intent of this recommendation that priority be given to invest in solutions for the long-term management of used nuclear fuel. It is the responsibility of waste owners to fund and manage the safe and secure operation of their wastes. The Nuclear Waste Management Organization, established by the nuclear energy corporations, is responsible for implementing the government-selected plan for managing nuclear fuel waste over the long-term. The Government of Canada is committed to ensuring that an appropriate and properly funded long-term safe and secure solution is in place for the managing nuclear fuel waste over long term.	N/A	Closed

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

#	JRP Recommendation	Government of Canada Response	OPG Commitment Reference	Status
66	The Panel recommends that the Government of Canada update the Nuclear Liability and Compensation Act or its equivalent to reflect the consequences of a nuclear accident. The revisions must address damage from any ionizing radiation and from any initiating event and should be aligned with the polluter pays principle. The revised Nuclear Liability and Compensation Act, or its equivalent, must be in force before the Project can proceed to the construction phase.	The Government of Canada accepts the intent of this recommendation, that the Government of Canada update the Nuclear Liability and Compensation Act or its equivalent to reflect the consequences of a nuclear accident. The Government of Canada recognizes the importance of bringing forward modernized nuclear civil liability legislation to bring compensation in line with internationally-accepted levels, and will decide on the timing of the next introduction of the Nuclear Liability and Compensation Act bill in Parliament.	N/A	Open
67	The Panel recommends that the Government of Canada provide clear and practical direction to the application of sustainability assessment in environmental assessments for future nuclear projects.	The Government of Canada accepts the intent of this recommendation. However, the scope of the assessment and the factors to be considered in future EAs for nuclear projects are decisions that should be taken on a project-by-project basis by future Responsible Authorities. Recognizing that sustainable development is a principle of the Canadian Environmental Assessment Act, should a separate sustainability assessment be required by Responsible Authorities for future nuclear projects, the Government of Canada agrees that it would be desirable for those Responsible Authorities to provide clear and practical direction to proponents and the public on how a sustainability assessment should be conducted.	N/A	Closed

APPENDIX E – GOVERNMENT OF CANADA RESPONSE TO JRP REPORT RECOMMENDATIONS

APPENDIX F Resolution of Conflicts or Inconsistencies

This Appendix will record the resolution of any conflicts or inconsistencies between the CNSC and OPG as it relates to any statement or requirement arising from the interpretation of the LCH or licence conditions.

APPENDIX G List of CNSC Concurrences, Acceptances, and Approvals

Licence Condition	Subject of the Concurrence, Acceptance, or Approval	CNSC e-Doc #	Licensee Reference #	Effective Date	Expiry Date

CNSC staff's Indigenous Consultation Report for the Darlington New Nuclear Project Licence to Construct Application

Signed/Signé le

27 June 2024 / 27 juin 2024

Boudrias, Genevieve

Digitally signed by Boudrias, Genevieve
DN: C=CA, O=GC, OU=CNSC-CCSN, CN="Boudrias, Genevieve"
Reason: I am the author of this document
Location:
Date: 2024.06.27 08:09:07-04'00'
Foxit PDF Editor Version: 13.0.1

Geneviève Boudrias, on behalf of Julia Cropley

Director General

Strategic Planning Directorate

Directrice générale

Direction de la planification stratégique

TABLE OF CONTENTS

FIGURES

TABLES

EXECUTIVE SUMMARY

The Canadian Nuclear Safety Commission (CNSC) Staff would like to acknowledge that the Darlington New Nuclear Project (DNNP) is situated within the lands and waters of the Michi Saagiig Anishinaabeg, the Gunshot Treaty (1877-88) and the Williams Treaties (1923). In 2018, the Williams Treaties First Nations (WTFN) Settlement Agreement with Canada and the Province of Ontario was signed, which recognized the pre-existing Treaty Rights of the WTFN. This includes Curve Lake First Nation, Hiawatha First Nation, Alderville First Nation, the Mississaugas of Scugog Island First Nation, Chippewas of Beausoleil First Nation, Chippewas of Georgina Island First Nation and the Chippewas of Rama First Nation.

Due to the amount and complexity of the information regarding Indigenous consultation and collaborative nature of the development of the related reporting, CNSC staff took a new approach of having a separate report in support of *Commission Member Document 24-H3 CNSC Staff's Assessment and Recommendation on OPG's Application for a Licence to Construct a BWRX 300 Reactor at the DNNP*. This report is CNSC staff's *Indigenous Consultation Report for the DNNP Licence to Construct Application* (the "Consultation Report"). It provides key information and recommendations to date, as well as next steps regarding the Indigenous consultation and engagement activities conducted by CNSC staff in relation to the DNNP Licence to Construct application. The Consultation Report also provides information about Ontario Power Generation's (OPG) engagement activities to date as per the requirements and guidance of REGDOC-3.2.2: *Indigenous Engagement* [1] and will form part of CNSC staff's submissions and recommendations to the Commission

In May 2022, CNSC staff provided early notification to Indigenous Nations and communities that OPG was expected to submit an application for the DNNP Licence to Construct. Since that time, CNSC staff have aimed to conduct a thorough, transparent, flexible and collaborative consultation and regulatory process for OPG's DNNP Licence to Construct application.

CNSC staff note that the information included in this Consultation Report focuses on the consultation related to the DNNP Licence to Construct, as that is the decision before the Commission. However, since May 2022, consultations and discussions have occurred simultaneously regarding the previous and related decision on the applicability of the EA to the chosen technology, the DNNP Licence to Construct application and topics relevant to other licensing phases of the DNNP. Some Indigenous Nations and communities have raised interests and concerns that go beyond the scope of the Licence to Construct application. In order to reflect the Rights, knowledge, views, interests, perspectives, insights, positions, potential impacts and concerns of the Indigenous Nations and communities regarding the DNNP in a more holistic manner, details that may go out of scope of the Licence to Construct decision have also been included in the Consultation Report.

CNSC staff worked to collaboratively draft key sections of this report with Indigenous Nations and communities, including issues tracking tables, summary of consultation and engagement activities, and the conclusions section. The Indigenous Nation and community specific consultation activities sections (Sections 4.1 to 4.8) specify which sections of the report were shared with each Indigenous Nation and community based on their particular Rights, interests and level of consultation and engagement with the CNSC in relation to the DNNP Licence to Construct application.

CNSC staff are committed to working with each Indigenous Nation and community and OPG to strive to achieve a consensus and resolution for any outstanding issues or concerns related to the DNNP Licence to Construct, in advance of the Part-2 hearing.

CNSC staff will continue to monitor and assess OPG's engagement activities throughout the regulatory review process as per REGDOC-3.2.2. and Staff's conclusions and assessment on OPG's engagement related to the DNNP Licence to Construct application will be included in the supplemental submission prior to the DNNP Licence to Construct Part-2 hearing.

An update on consultation efforts with all identified Indigenous Nations and communities as well as updated issues tracking tables and Rights Impact Assessments (RIAs), will be submitted to the Commission as part of CNSC staff's supplemental submission prior to the DNNP Licence to Construct Part-2 hearing. This submission will include CNSC staff's conclusions and recommendations with regards to consultation and impacts to Indigenous and/or Treaty Rights. Information will also be included about the outcomes of CNSC staff's efforts to strive to achieve a consensus on the project as well as any concerns and key commitments to address any potential impacts as the result of the Licence to Construct application.

1. INTRODUCTION

As started, due to the amount and complexity of the information regarding Indigenous consultation and collaborative nature of the development of the related report content, CNSC staff took a new approach of creating a separate report, in support of the *Commission Member Document 24-H3 CNSC Staff's Assessment and Recommendation on OPG's Application for a Licence to Construct a BWRX 300 Reactor at the DNNP*. *CNSC staff's Indigenous Consultation Report for the Darlington New Nuclear Project License to Construct Application* (the "Consultation Report") provides key information, as well as next steps regarding the Indigenous consultation and engagement activities conducted by CNSC staff in relation to the regulatory process for Ontario Power Generation's (OPG) Darlington New Nuclear Project (DNNP) Licence to Construct application. The Consultation Report also provides information about OPG's engagement activities to date as per the requirements of REGDOC-3.2.2: *Indigenous Engagement*.

CNSC staff note that the information included in this Consultation Report focuses on the consultation related to the DNNP Licence to Construct, as that is the decision before the Commission. However, since May 2022, consultations and discussions have occurred simultaneously regarding the previous and related decision on the applicability of the EA to the chosen technology, the DNNP Licence to Construct application and topics relevant to other licensing phases of the DNNP. Some Indigenous Nations and communities have raised interests and concerns that go beyond the scope of the Licence to Construct application. In order to reflect the Rights, knowledge, views, interests, perspectives, insights, positions, potential impacts and concerns of the Indigenous Nations and communities regarding the DNNP in a more holistic manner, details that may go out of scope of the Licence to Construct decision have also been included in the Consultation Report.

The CNSC's approach to consultation and engagement with Indigenous Nations and communities is guided by the Duty to Consult and Accommodate, as required by subsection 35(1) of the *Constitution Act, 1982* [3], *United Nations Declaration on the Rights of Indigenous Peoples Act* (UNDA) [2] and the CNSC's commitment to Reconciliation, as discussed below.

CNSC staff acknowledge that at the time of publishing this Consultation Report, some Indigenous Nations and communities have outstanding concerns (see Section 4 and Appendix A for additional details). CNSC staff have made initial commitments to address some of the concerns raised to date. CNSC staff are committed to working with the Indigenous Nations and communities through further consultation on the DNNP Licence to Construct application to identify additional commitments and mitigations to address the concerns related to the DNNP Licence to Construct application, as appropriate. CNSC staff are striving to achieve a consensus and resolution for any outstanding issues or concerns related to the DNNP Licence to Construct application.

CNSC staff note that there will be a two-part public hearing for the DNNP Licence to Construct application and Part 2 will focus on the interventions received. In order to

provide additional time to collaborate and consult with the Indigenous Nations and communities, CNSC staff will be submitting a supplemental report to the Commission in advance of the Part 2 Licence to Construct hearing.

This supplemental submission will include an update on CNSC staff's consultation activities, Rights Impact Assessments (RIAs) with WTFN, updated issues tracking tables, OPG's engagement activities, conclusions and recommendations with regards to the Duty to Consult and, where appropriate, Accommodate. Information will also be included about the outcomes of CNSC staff's efforts to strive to achieve a consensus on the DNNP Licence to Construct application as well as any concerns and commitments to address any potential impacts as the result of the Licence to Construct application.

CNSC staff acknowledge that in the Commission's *Record of Decision – Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment* [4], issued 22 April 2024, the Commission directed CNSC staff to:

- Support OPG's collaborative work on the following study and assessments:
    - RIA
    - Indigenous Knowledge study
    - Cumulative Impacts Assessment
- Produce an up-to-date consultation report, to be filed on the record of the public hearing regarding the Licence to Construct application.
- The Commission expects both CNSC staff and OPG to continue their respective consultation and engagement activities with all identified Indigenous Nations and communities and their representatives over the lifecycle of the DNNP and with respect to any subsequent applications to the Commission.

CNSC staff are making progress on addressing the Commission's direction and are also providing oversight of OPG's efforts to carry out the actions and direction identified by the Commission. For example, both OPG and CNSC staff have committed to supporting an Indigenous Knowledge study and cumulative impact assessment with the WTFN. CNSC staff are aiming to work on RIAs with Curve Lake First Nation, Hiawatha First Nation and the Mississaugas of Scugog Island First Nation in relation to the Licence to Construct application. Additional information about the current status of CNSC staff's implementation of the Commission's direction are included in Sections 4 and 6 of this Consultation Report. An update on any progress made on these items will be included in CNSC staff's supplemental submission, in advance of the Licence to Construct Part-2 hearing.

CNSC staff note that requirements and conditions related to the specific commitments made throughout the DNNP regulatory process may be included in an updated Licence Conditions Handbook. Any updates to the Licence Conditions Handbook will be based on the outcomes of CNSC staff's consultation activities, OPG's engagement as well as the direction by the Commission outlined in the *Record of Decision – Ontario Power*

Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment [4].

1.1 Duty to Consult and, where appropriate, Accommodate

The common-law duty to consult and, where appropriate, accommodate Indigenous Nations and communities applies when the Crown contemplates actions that may adversely affect potential or established Indigenous and/or treaty Rights. The Commission, as an agent of the Crown, must ensure that all licence decisions under the *Nuclear Safety and Control Act* (NSCA) [5] and decisions under other applicable legislation, uphold the honour of the Crown and consider Indigenous peoples' potential or established Indigenous and/or treaty Rights, pursuant to section 35 of the *Constitution Act, 1982* [3]. CNSC staff work in collaboration and consultation with potentially impacted Indigenous Nations and communities to assess potential impacts on Rights and propose mitigation or accommodation measures to address identified impacts.

When the CNSC receives a licence application, CNSC staff conduct an initial assessment to determine whether there is a common law duty to consult. If the duty to consult is triggered, the CNSC then assesses the depth of the duty to consult and, where appropriate, accommodate.

The CNSC's approach to assessing the preliminary depth of the duty to consult is in line with the process and policies outlined in the *Aboriginal Consultation and Accommodation - Updated Guidelines for Federal Officials to Fulfill the Duty to Consult* [6]. In order to assess the potential depth of consultation, the CNSC uses resources such as Crown-Indigenous Relations and Northern Affairs Canada's Aboriginal and Treaty Rights Information System (ATRIS) [7], information regarding Indigenous and Treaty Rights shared by Indigenous Nations and communities through interventions or submissions, as well as information gathered by proponents or licensees as outlined in REGDOC-3.2.2: *Indigenous Engagement* [1]. As the CNSC is not a Rights-determining body, the CNSC does not conduct a formal strength of claim analysis. The CNSC does not have the authority to confirm, establish or deny the existence of Indigenous and/or treaty Rights as claimed or asserted by Indigenous Nations and communities. Rather, using the sources of data listed above, the CNSC assesses the potential severity of the potential impacts of the proposed project to determine what depth of consultation may be required to adequately discharge the duty to consult and, where appropriate, accommodate.

CNSC staff continuously updates the assessment of the depth of the duty to consult and, where appropriate, accommodate, as additional information is made available. This can include information provided by the Indigenous Nations and communities with regards to the nature and extent of their Rights that may be impacted by the project, as well as based on CNSC staff's technical assessment of the project's potential impacts on the environment and Indigenous Nations and communities. CNSC staff ensure that the approach to consultation is commensurate with the assessed depth of consultation and is flexible based on the specific needs of each Indigenous Nation and community.

The CNSC sets out requirements and guidance for licensees and applicants whose proposed projects may raise the Crown's duty to consult in REGDOC-3.2.2: *Indigenous Engagement*. While the CNSC cannot delegate its duty to consult obligation, procedural aspects of the consultation process can be carried out by proponents in support of meeting the CNSC's consultation obligations, where appropriate. For this matter, the Commission will be considering the engagement undertaken by OPG and proposed mitigations or accommodation, when assessing whether the Duty to Consult and, where appropriate, accommodate has been met.

1.2 United Nations Declaration on the Rights of Indigenous Peoples

The *United Nations Declaration on the Rights of Indigenous Peoples* (UN Declaration) [8] is an international human rights instrument that recognizes the human Rights of Indigenous peoples around the world. On June 21, 2021, the *United Nations Declaration on the Rights of Indigenous Peoples Act* (UNDA) [2] received Royal Assent and came into force in Canada. This legislation provides a framework for the Government of Canada to work with Indigenous peoples to implement the UN Declaration at the Federal level.

The CNSC is committed to supporting the Government of Canada's whole-of-government approach to implementing UNDA, and the *2023-2028 UNDA Action Plan* [9] (*UNDA Action Plan*), where it intersects with the CNSC's mandate. The principle of Free, Prior and Informed Consent (FPIC) is an integral aspect of UNDA that is reflected in the *2023-2028 UNDA Action Plan* [9].

Measure #32 in the Shared Priorities chapter of the UNDA action plan commits to "the development of guidance for engaging with Indigenous Peoples on natural resources projects in order to obtain free, prior and informed consent, consistent with Articles 18, 19, 20, 27, 28, 29, and 32 of the United Nations Declaration on the Rights of Indigenous Peoples.". This measure is being led by Natural Resources Canada (NRCan), with the support of various federal departments of agencies, and is currently in the planning phase.

The CNSC is currently using the following sources of guidance on FPIC:

- *Principles Respecting the Government of Canada's Relationship with Indigenous Peoples* [10], principle #6:

  > *"The Government of Canada recognizes that meaningful engagement with Indigenous peoples aims to secure their free, prior, and informed consent when Canada proposes to take actions which impact them and their Rights, including their lands, territories and resources."*

- *Backgrounder: United Nations Declaration on the Rights of Indigenous Peoples Act* [11]– FPIC section:

> *"More specifically, FPIC describes processes that are free from manipulation or coercion, informed by adequate and timely information, and occur sufficiently prior to a decision so that Indigenous Rights and interests can be incorporated or addressed effectively as part of the decision making process - all as part of meaningfully aiming to secure the consent of affected Indigenous peoples.*
>
> *FPIC is about working together in partnership and respect. In many ways, it reflects the ideals behind the relationship with Indigenous peoples, by striving to achieve consensus as parties work together in good faith on decisions that impact Indigenous Rights and interests. Despite what some have suggested, it is not about having a veto over government decision making".*

The CNSC's approach to consultation and engagement with Indigenous peoples is mindful of the principles articulated in UNDA. The CNSC strives to achieve a consensus through collaborative consultation approaches that allow for open dialogue and provides opportunities to understand, document, and address the concerns of Indigenous Nations and communities, including measures to minimize or avoid potential impacts to their Rights and interests, to the extent possible. Concerns raised by Indigenous Nations and communities, including related to consent or lack of consent for a project, are considered as part of the public hearing and the Commission's decision-making process. The CNSC provides funding through the Participant Funding Program (PFP) and the Indigenous and Stakeholder Capacity Fund (ISCF) to support meaningfully participate in Commission proceedings and ongoing regulatory work.

The CNSC is also committed to continuing to evolve it's approaches to align with best practices and guidance that emerge through whole-of-government implementation of UNDA, and the *UNDA Action Plan*, including those that relate to FPIC. This includes initiating formal consultation on proposed updates and amendments in 2024-2025 to the CNSC's REGDOC-3.2.2: *Indigenous Engagement* to provide nuclear proponents and licensees with further guidance and clarity with regards to how their approach to engagement and partnership with Indigenous Nations can align with UNDA.

Potentially impacted Indigenous Nations or communities that wish to express their views directly to the Commission regarding their process and position on their FPIC in relation to the proposed DNNP License to Construct Application, are encouraged to use the opportunity through their written and/or oral intervention. This will help assist and inform the Commission's decision-making for this matter.

1.2.1 Role of the Proponent

CNSC staff encourages all nuclear proponents and licensees to pro-actively work with Indigenous Nations and communities who are potentially impacted by their projects to establish a mutually agreeable process to seek the potentially impacted Nation's FPIC.

CNSC staff acknowledge that some Indigenous Nations and communities have raised concern regarding FPIC and have requested that OPG obtain FPIC, specific to the DNNP Licence to Construct application. CNSC staff have had discussions with OPG regarding these concerns and have encouraged OPG to work collaboratively with potential impacted Indigenous Nations and communities to address the concerns related to FPIC.

1.3 CNSC's Commitment to Reconciliation

The CNSC's approach to reconciliation focuses on establishing ongoing collaborative relationships through consistent and meaningful engagement and consultation, and it aims to build capacity and seek to improve opportunities for Indigenous participation in decision making and regulatory oversight activities throughout the full lifecycle of nuclear facilities and projects located in their territories.

The CNSC is committed to listening actively, establishing regular dialogue, and understanding the perspectives and values put forth by Indigenous Nations and communities. Feedback from Indigenous Nations and communities, along with priorities identified by them, guide how the CNSC identifies key areas of focus for implementing action and change.

The following initiatives are some of our key reconciliation areas:

- Formalizing Terms of Reference (ToR) for long-term engagement with Indigenous Nations and communities.
- Incorporating Indigenous Knowledge into the CNSC's regulatory processes and assessments.
- Reducing financial and capacity barriers to participate in the full life-cycle of the CNSC's regulatory activities.
- Updating regulatory documents and expectations to better reflect Indigenous Nations and communities' perspectives and the principles of UNDA.
- Increasing CNSC staff's Indigenous cultural competency and awareness.

Additional information about the key initiatives with regards to the CNSC's reconciliation initiatives can be found on the CNSC website here: Reconciliation (cnsc-ccsn.gc.ca)

1.4 Identification of Indigenous Nations and Communities

CNSC staff have identified which Indigenous Nations and communities potential or established Indigenous and/or treaty Rights may be adversely affected by the DNNP licensing decision. The Indigenous Nations and communities have been identified based

on analysis conducted using Crown Indigenous Relations and Northern Affairs Canada (CIRNAC) ATRIS and other mapping and database tools, as well as through a review of existing CNSC and publicly available resources including CNSC records and previous interventions and submissions by Indigenous Nations and communities who may have expressed interest in OPG's DNNP in the past.

CNSC staff identified the following Indigenous Nations and communities who have Indigenous and/or Treaty Rights in the area where the DNNP is proposed (collectively, the WTFN or the "potentially impacted Indigenous Nations and communities"):

- Alderville First Nation
- Curve Lake First Nation
- Hiawatha First Nation
- Mississaugas of Scugog Island First Nation
- Beausoleil First Nation
- Chippewas of Georgina Island First Nation
- Chippewas of Rama First Nation

In addition, CNSC staff have identified the following Indigenous Nations and communities that have expressed an interest in the DNNP (collectively, the "interested Indigenous Nations and communities"):

- Saugeen Ojibway Nation
- Mohawks of the Bay of Quinte
- Métis Nation of Ontario
- Six Nations of the Grand River

The potentially impacted Indigenous Nations and communities and the interested Indigenous Nations and communities collectively will be referred to as the "identified Indigenous Nations and communities"

This determination is a preliminary assessment that can be adjusted based on information received from Indigenous Nations and communities throughout the lifecycle of the DNNP, should it proceed.

1.5 CNSC Staff's approach to consultation for the DNNP Licence to Construct Application

It is important to note that CNSC staff have been consulting and engaging with potentially impacted or interested Indigenous Nations and communities with regards to the DNNP an on-going basis since 2007 and throughout the environmental assessment (EA) conducted by a Joint Review Panel (JRP) under the *Canadian Environmental Assessment Act 1992* (CEAA 1992) [12]. Consultation efforts during the EA process included letters, emails, telephone calls, and meetings at key points, including an invitation to review and provide comments on OPG's EA and licence to prepare site application in 2009, as well as opportunities to apply for funding through the Canadian Environmental Assessment Agency's (CEAA) PFP. CNSC and CEAA staff provided many opportunities for the Indigenous Nations and communities to submit comments on the project and discuss potential concerns, including any potential impact on Rights. CNSC staff encouraged Indigenous Nations and communities to submit information to the JRP and to participate in the public hearings. During the EA process, no project specific concerns or impacts to Rights were identified by the Indigenous Nations and communities. The *Joint Review Panel Environmental Assessment Report* (JRP EA Report) [13]report indicated that CNSC and CEAA staff concluded that the DNNP was not likely to result in significant adverse effects on the current use of land and resources for traditional purposes by Indigenous peoples. Additional information about consultation activities related to the EA process can be found in the JRP EA Report.

CNSC staff acknowledge that consultation requirements and expectations have evolved since the EA was conducted and that several Indigenous Nations and communities have indicated that the consultation during the EA was not adequate. CNSC staff note that when the EA was conducted, conclusions were drawn on the assessment and a licence to prepare site was issued on the basis that the duty to consult had been adequately discharged. Additional information regarding the Indigenous Nations and communities evolving concerns with the consultation during the EA and CNSC staff's responses are included in the issues tracking tables in Appendix A.

CNSC staff have ensured that the consultation and engagement process for the DNNP has taken into consideration the recent changes, including the signing of the WTFN Settlement Agreement in 2018 and evolution of best practices and law. This includes UNDA, the CNSC's commitment to reconciliation and the introduction of the *Principles Respecting the Government of Canada's Relationship with Indigenous Peoples* [10]. Since the conclusion of the EA in 2012, CSNC staff have continued to consult and engage with Indigenous Nations and communities on the DNNP, including on the renewal of the DNNP Licence to Prepare Site in 2021, the review process prior to and during the hearing regarding the applicability of the DNNP EA to OPG's chosen technology; and the Licence to Construct application.

CNSC staff also acknowledge that should the DNNP proceed throughout the licensing stages, there will be a continued obligation on the CNSC to hear and understand perspectives and concerns of Indigenous Nations and communities and continue to

consult and engage over the lifecycle of the DNNP, should the project proceed. Specifically, for the DNNP Licence to Construct application, based on CNSC staff's assessment as described in Section 1.1 above, CNSC staff determined that the Licence to Construct application for the DNNP raised the legal Duty to Consult and, where appropriate, accommodate, potentially affected Indigenous Nations and communities.

CNSC staff sought information from potentially impacted Indigenous Nations and communities about the nature of their Indigenous and/or Treaty Rights protected under section 35 of the *Constitution Act, 1982*, how they may be impacted by OPG's DNNP Licence to Construct application and potential measures, commitments and/or conditions to meaningfully address potential impacts and concerns identified by the Nations. As part of this process, CNSC staff considered information provided by Indigenous Nations and communities as well as by OPG about the potential impacts of the Project, in an effort to understand the nature, scope and extent of any adverse impacts on Indigenous Nations and communities Rights and interests and potential measures to address those impacts and concerns.

Following current best practices and approaches for consultation and in an effort to ensure potentially impacted Indigenous Nations and communities were able to present their views in a collaborative and meaningful way with respect to potential impacts of the Project on their Rights and interests, CNSC staff have offered and are aiming to collaboratively draft RIAs specific to the DNNP Licence to Construct application with potentially impacted and interested WTFN. CNSC staff note that the Mississaugas of Scugog Island have expressed concerns regarding the RIA process, including their view that the process has not been collaborative. Additional details regarding their concerns are included in Section 1.5.1.

CNSC staff have conducted consultation for the DNNP Licence to Construct application with consideration of the Government of Canada and CNSC's commitments to Reconciliation and the principles of UNDA with the goal of striving to achieve a consensus with respect to the DNNP Licence to Construct application by the conducting the following activities with the identified Indigenous Nations and communities:

- Providing early notification in May 2022 about the expected regulatory process for the applicability of the EA to OPG's selected technology and the Licence to Construct application for the DNNP and offering opportunities for early consultation with the identified Indigenous Nation and community to discuss the DNNP.
- Offering to discuss how each Indigenous Nation and community would like to be consulted and create an approach to consultation that would be meaningful and mutually agreeable.
- Conducting RIAs with potentially impacted WTFN, in response to concerns raised by Curve Lake First Nation, Hiawatha First Nation and the Mississaugas of Scugog Island First Nation about the potential for the DNNP Licence to Construct application to impact their Rights and interests.

- Responding to and working with potentially impacted Indigenous Nations and communities and OPG to address issues and concerns raised, while striving to achieve a consensus on each issue.
- Collaborating on issues tracking tables, which are included in Appendix A. An issues tracking table was created for each identified Indigenous Nation or community who has raised a concern related to the DNNP. The issues tracking tables outline the issues and concerns raised and responses and status of the issue. CNSC staff sought input from OPG on the issues tracking tables to ensure their response and commitments were accurately captured and communicated to the Indigenous Nations and communities.
- Collaborating on the Consultation Report with each identified Indigenous Nation or community who has raised concerns related to the DNNP to ensure the views of each Indigenous Nation and community are reflected, including where there are disagreements, and proposed measures and commitments by CNSC staff and OPG to address the issues and concerns raised to date.
- Supporting and encouraging participation in the decision-making process, through interventions for the DNNP Commission hearings which provides an opportunity for the Indigenous Nations and communities' knowledge, perspectives and concerns directly to the Commission.
- Providing funding and capacity support throughout the consultation and engagement process through the CNSC's PFP and ISCF funding programs,
- Providing information and consulting on the CNSC staff's technical review and assessment of OPG's Licence to Construct application and related programs, documents and reports.

CNSC staff have also committed to providing opportunities for Indigenous Nations and communities to continue to participate in the regulatory and decision-making processes throughout the lifecycle of the DNNP, should the project proceed. This includes committing to collaborating with WTFN's and OPG on supporting an Indigenous Knowledge study specific to the DNNP to gather more information and data regarding the WTFN's Rights and interests that could be potentially impacted by the DNNP and other projects in the treaty territory. CNSC staff note that the CNSC has been offering to provide funding and support for an Indigenous Knowledge study with interested WTFN for many years and remain committed to doing so. The results of these studies could then help to inform an adaptive management approach to the oversight of the DNNP, should it proceed.

The adaptive management approach can ensure that the DNNP and related activities would be protective of the WTFN's Rights and interests, as the WTFN's gather this data, should the project proceed. Examples of this could include:

- OPG working in collaboration with the WTFN to incorporate the outcomes of these studies, where appropriate, into the Environmental Monitoring and Environmental Assessment Follow-Up Plan

- CNSC staff working in collaboration with the WTFN's to incorporate Indigenous Knowledge into the CNSC's Independent Environmental Monitoring Program
- Collaborating on regulatory oversight and follow-up activities related to WTFN's concerns and OPG's specific commitments to each potentially impacted Nation.
- Collaborating with WTFN's to update Rights Impact Assessments at future licensing phases (i.e Licence to Operate) to consider, reflect and incorporate the outcomes of the Indigenous Knowledge study and cumulative effects assessment in the decision-making process.

CNSC staff will continue to consult with the potentially impacted Indigenous Nations and communities regarding the commitments and the adaptive management approach. CNSC staff note that based on the outcomes of CNSC staff's consultation activities and OPG's engagement activities:

- Commitments may be included as conditions or compliance verification criteria in an updated *Licence Conditions Handbook*

- CNSC staff commitments will be captured in a final commitment list for each potentially impacted Indigenous Nation and community in the supplemental submission, to be provided to the Commission in advance of the Part 2 Licence to Construct hearing.

Details regarding CNSC staff's consultation activities to date with regards to the DNNP Licence to Construct application is found in Section 4 of this report.

CNSC staff acknowledge that at the time of publishing this Indigenous Consultation Report, some Indigenous Nations and communities have outstanding concerns with regards to the DNNP, including the Licence to Construct application (see Appendix A Issues Tracking Tables for additional details). CNSC staff are committed to working with each Indigenous Nation and OPG with the goal of striving to achieve a consensus on the DNNP Licence to Construct application, including the outstanding issues or concerns in scope of the DNNP Licence to Construct, in advance of the Part-2 hearing. CNSC staff acknowledge that issues and concerns have been raised that go beyond the scope of the DNNP Licence to Construct application. For example, some concerns regarding waste management will be in scope during the Licence to Operate phase, should the DNNP proceed. CNSC staff remain committed to working with the Indigenous Nations and communities to address these concerns throughout the lifecycle of the DNNP, should it proceed.

CNSC staff will provide a supplemental submission to the Commission in advance of the Licence to Construct Part-2 hearing on the status of CNSC staff's consultation efforts, OPG's engagement, the outcomes from the CNSC's efforts to strive to achieve a consensus on the project, concerns and any key measures and commitments to address any potential impacts as the result of the Licence to Construct application.

1.6 Indigenous Nations and Communities views on CNSC's approach to consultation

As part of the consultation process, CNSC staff sought feedback and perspectives on the CNSC's consultation process for the DNNP Licence to Construct application from Indigenous Nations and communities who have been actively participating in the DNNP regulatory process to date. The Mississaugas of Scugog Island First Nation shared their views on the approach to consultation and concerns regarding the implementation of FPIC. CNSC staff are committed to continuously improving the approach to consultation, based on this feedback received.

1.6.1 The Mississaugas of Scugog Island First Nation

The Mississaugas of Scugog Island First Nation have raised concerns regarding the fact that the WTFN were never consulted when the Darlington Nuclear Generating site and waste management facility was established. The Mississaugas of Scugog Island First Nation have requested that the CNSC mandate OPG to obtain the Mississaugas of Scugog Island First Nation's consent for the DNNP. The Mississaugas of Scugog Island First Nation have stated that that their concern and request for consent has not been addressed by either OPG or the CNSC.

Mississaugas of Scugog Island First Nation wishes to document that the Mississaugas of Scugog Island First Nation was not engaged or meaningfully consulted by the CNSC in developing the approach, scope, methodology and scheduling of the RIA. The Mississaugas of Scugog Island First Nation notes that the CNSC staff have taken MSIFN's request raised at the January 2024 hearing for a RIA, and Cumulative effects assessment and initiated a Crown-led RIA. However, this process lacks collaboration with WTFN's sufficient time for First Nation governance processes to be integrated into the RIA framework, and is not informed by a requested gap analysis, Indigenous Knowledge Study, or Cumulative Effects Assessment. The Mississaugas of Scugog Island First Nation notes that the Mississaugas of Scugog Island First Nation has had to engage legal counsel to work closely with staff to engage with CNSC staff on the various RIA issues. The Mississaugas of Scugog Island First Nation's position is that any RIA determinations will impact the Mississaugas of Scugog Island First Nation and all WTFN interpretation of treaty Rights for generations to come.

The Mississaugas of Scugog Island First Nation's view is that the RIA is being initiated and drafted by the CNSC, with the Mississaugas of Scugog Island First Nation only having the opportunity to comment on the RIA document. This approach is not collaborative, and again, does not provide the Mississaugas of Scugog Island First Nation with sufficient time to accurately assess the impacts of the proposed projects on MSIFN's Rights. the Mississaugas of Scugog Island First Nation does not agree with the chosen approach. the Mississaugas of Scugog Island First Nation will continue to reject the RIA approach being forced upon the Nation by the CNSC without meaningful consultation.

CNSC staff response to MSIFN's concerns regarding the RIA consultation process:

CNSC staff note that additional information regarding the Mississaugas of Scugog Island First Nation concerns about the RIA framework is included in their letter dated January 11, 2024 in Appendix B. CNSC staff's responses to many of the concerns raised regarding the approach and path forward on the RIA is included in the CNSC response letter dated January 24, 2024 included in Appendix B.

CNSC staff are committed to continuing to work with the Mississaugas of Scugog Island First Nation on a path forward for collaboration on the RIA for the DNNP Licence to Construct. CNSC staff are also committed to supporting an Indigenous knowledge study.

2. ASSERTED OR ESTABLISHED INDIGENOUS AND/ OR TREATY RIGHTS IN THE PROJECT AREA

The DNNP is proposed to be constructed within the Darlington Nuclear Generating site on the north shore of Lake Ontario, approximately 15 KMs from Oshawa Ontario. The site is located on Michi Saagiig Anishinaabeg lands, waters and the WTFN territory. The WTFN consist of Hiawatha First Nation, Alderville First Nation, Curve Lake First Nation, Beausoleil First Nation, Mississaugas of Scugog Island First Nation, Chippewas of Georgina Island First Nation and Chippewas of Rama First Nation.

In 2018, a settlement agreement was reached between the 7 First Nations that adhered to the Williams Treaties and Governments of Canada and Ontario. The settlement agreement formally recognizes the pre-existing Treaty harvesting Rights of the Williams Treaties Signatories members to hunt, trap, fish and gather for food, social and ceremonial purposes within the portions of their traditional territories covered by Treaties No. 5, 16, 18, 20, and 27-271/4 that lie outside of Clauses 1 and 2 of the Williams Treaties. The Settlement Agreement also included a *Statement of Apology for the Impacts of the 1923 Williams Treaties* [14] from the Government of Canada for the negative impacts of the 1923 Williams Treaties on the WTFN.

The lands where the DNNP is proposed are covered by the Johnson-Butler Purchase, also referred to as the "Gunshot Treaty" (1787-88), the Williams Treaties (1923), and the lands that were subject to the settlement agreement. Figure 1 below shows a map of the Williams Treaties territory.

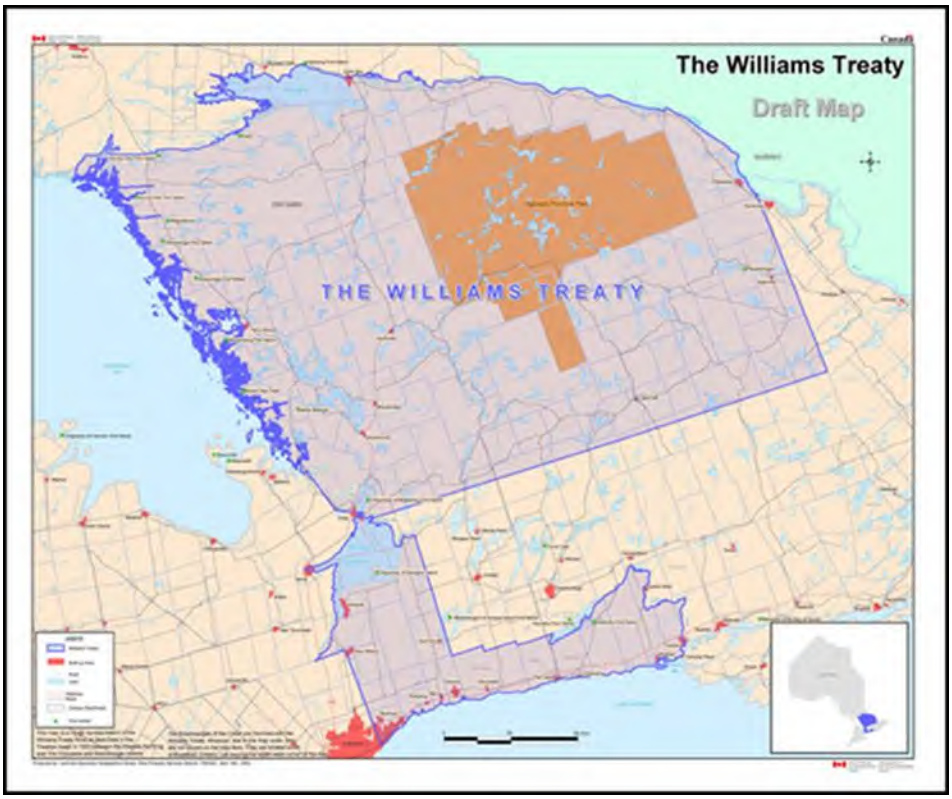

Figure 1: Map of the Williams Treaties

3. PARTICIPANT FUNDING PROGRAM

In order to support the participation of the identified Indigenous Nations and communities in all the decision phases of the DNNP licensing and regulatory review process, CNSC staff made funding available to all identified Indigenous Nations and communities through its PFP on multiple occasions. In total, since providing early notification regarding the expected DNNP Licence to Construct application, the CNSC has allocated $271,059.21, as shown in Table 1, to support the participation of the identified Indigenous Nations and communities in the DNNP licensing and regulatory review process. Additional funding was provided to members of the public and stakeholders, as described in the DNNP Licence to Construct Commission Member Document.

Three stages of funding have been made available:

- Stage 1 – Participant funding to support the review of OPG's environmental impact statement review document and plant parameter envelope for the DNNP and participate in meetings and a workshop with CNSC staff. This participant funding opportunity was open for applications from October 24 to December 2, 2022.
- Stage 2 - Participant funding to support review of CNSC Staff's and OPG's submission and participate in the Commission hearing on the applicability of the DNNP environmental assessment and plant parameter envelope to OPG's selected reactor technology. This participant funding opportunity was open for applications from April 3 to May 26, 2023.
- Stage 3 - Participant funding to support review of CNSC Staff's and OPG's submission and participate in the Commission hearing for OPG's application for a licence to construct for the DNNP. This participant funding opportunity was open for applications from October 10 to December 8, 2023.

Table 1: Participant funding approved for the DNNP regulatory process.

Indigenous Nation or community	Stage 1 approved funding	Stage 2 approved funding	Stage 3 approved funding	Total approved funding
Curve Lake First Nation	Did not apply	$8,030*	$15,779.72	$23,809.72
Hiawatha First Nation	$8,250	$20,790	$26,015.88	$55,055.88
Mississaugas of Scugog Island First Nation	$19,281.90	$18,233.93	$26,099.58	$63,615.41
Saugeen Ojibway Nation	$21,231.20	$21,231.20	$22,975.80	$65,438.20
Métis Nation of Ontario	$12,800	$13,200	$19,140	$45,140

Indigenous Nation or community	Stage 1 approved funding	Stage 2 approved funding	Stage 3 approved funding	Total approved funding
Six Nations of the Grand River	$7,500	Did not apply	Did not apply	$7,500
Chippewas of Georgina Island First Nation	Did not apply	$2,750*	$7,750	$10,500
Total				**$271,059.21**

**The CNSC awarded funding to Curve Lake First Nation and Chippewas of Georgina Island First Nation, outside of the formal PFP opportunity period, to meet with CNSC staff to discuss the applicability of the DNNP environmental assessment and plant parameter envelope to Ontario Power Generation's selected BWRX-300 Small Modular Reactor technology.*

4. CNSC STAFF'S CONSULTATION ACTIVITIES

In order to fulfill the CNSC's consultation obligations for the decision under the NSCA on the DNNP Licence to Construct application, CNSC staff sent early notification of the expected DNNP Licence to Construct application in May 2022 and since then have continued to provide multiple opportunities for consultation, dialogue and collaboration with Indigenous Nations and communities about their concerns and interests related to the DNNP Licence to Construct application. CNSC staff provided opportunities for dialogue through multiple phone calls, correspondence, and meetings with leadership and community representatives, as well as through the provision of funding and capacity support. CNSC staff have also encouraged the identified Indigenous Nations and communities to participate in the Commission's public hearing process to advise the Commission of any concerns they may have and proposed resolutions to the concerns. Additional information about the specific consultation and engagement activities with each identified Indigenous Nation and community is provided in the subsections below.

CNSC staff provided regular updates to each identified Indigenous Nation and communities as part of its consultation work, to keep them informed of key developments and to solicit their feedback and perspectives on the Project, the potential impacts to Indigenous and/or Treaty Rights as well as the regulatory review and consultation processes. CNSC staff offered opportunities for a collaborative approach with the Indigenous Nations and communities with respect to reviewing and commenting on relevant sections of this Consultation Report, including the issues tracking tables in Appendix A. CNSC staff have offered and are aiming to collaboratively draft project specific RIA reports, however MSIFN has expressed concerns with the process being followed, as included in Section 1.6.1. Additional information regarding the RIA process, including concerns raised by Curve Lake First Nation, Hiawatha First Nation and the Mississaugas of Scugog Island First Nation is included in Section 6 of this report.

CNSC staff have also been consulting and engaging with the identified Indigenous Nations and communities on an ongoing basis concerning nuclear projects and activities at the Darlington site and have ToR in place for long-term engagement with several of the identified Indigenous Nations and communities — including with Hiawatha First Nation (signed in 2023), Curve Lake First Nation (signed in 2021), the Mississaugas of Scugog Island First Nation (signed in 2022), Saugeen Ojibway Nation (signed in 2019) and the Métis Nation of Ontario (signed in 2019). The ToRs provide a forum for collaboration and a structure for regular meetings and dialogue to address areas of interest or concern regarding CNSC-regulated facilities and activities, including the DNNP.

During these recurring meetings, CNSC staff provided updates specific to the DNNP and Licence to Construct application, and had consultations and discussions regarding interests, concerns and potential impacts on Indigenous and/or Treaty Rights in relation to the DNNP Licence to Construct application. CNSC staff have offered to and have held multiple DNNP specific meetings to discuss issues of concern, and to collaborate

proactively on an approach to consultation and engagement for the DNNP, including the Licence to Construct application.

Table 2 below contains a summary of the key correspondence and opportunities to participate in the consultation and regulatory process for the DNNP Licence to Construct application since early notification of the expected Licence to Construct application was provided to the identified Indigenous Nations and communities in May 2022.

Appendix B includes copies of the key correspondence associated with the consultation activities listed in Tables 2. CNSC staff have included general correspondence with all identified Indigenous Nations and communities, such as examples of notifications at key project milestones, notices about funding opportunities, webinars and outreach events. Appendix B also includes correspondence associated with the consultation and engagement activities listed in Tables 3 through 13. This includes offers to meet and consult on the DNNP, opportunities to review and collaborate on CNSC documents and issues, concerns, comments or questions received and CNSC staff responses.

Table 2: Summary of the general correspondence and opportunities to participate in the consultation and regulatory process for the DNNP since May 2022.

Date	Indigenous Nation or community	Correspondence / Activity
May 2022	Alderville First Nation Curve Lake First Nation Hiawatha First Nation Mississaugas of Scugog Island First Nation Beausoleil First Nation Chippewas of Georgina Island First Nation Chippewas of Rama First Nation Mohawks of the Bay of Quinte Métis Nation of Ontario	On May 13, 2022, CNSC staff sent email correspondence providing advance notice of OPG's expected Licence to Construct application and provided information about early and ongoing engagement and consultation opportunities.
June and July 2022	Alderville First Nation Curve Lake First Nation Hiawatha First Nation Mississaugas of Scugog Island First Nation Beausoleil First Nation	CNSC staff conducted follow up phone calls and emails multiple times throughout June and July 2022 to confirm receipt of the May 2022 correspondence and confirm whether there was interest in meeting to discuss the DNNP Licence to Construct application.

Date	Indigenous Nation or community	Correspondence / Activity
	Chippewas of Georgina Island First Nation Chippewas of Rama First Nation Mohawks of the Bay of Quinte Métis Nation of Ontario	
October 2022	All identified Indigenous Nations and communities	On October 20, 2022, CNSC staff provided notification of a DNNP webinar on November 15, 2022. The purpose of the webinar was to discuss the DNNP Licence to Construct Application as well as the applicability of the EA to OPG's chosen technology.
October 2022	All identified Indigenous Nations and communities	On October 25, 2022, CNSC staff sent notification email regarding the available of the first stage of PFP for the DNNP and offered to meet to discuss further.
November 2022	All identified Indigenous Nations and communities	On November 23 and November 24, 2022, CNSC staff sent letters indicating that OPG had submitted an application for a Licence to Construct for the DNNP. These letters provided information about the Environmental Assessment process, the requirement for OPG to demonstrate how the selected technology (BWRX-300) fits within the bounds of the approved EA, as well as participant funding offered to review OPG's documents (EIS Review and PPE). Follow up phone calls were also conducted to ensure receipt of letter and re-iterate the offer to meet directly with each identified Indigenous Nation or community to discuss any concerns or comments.
December 2022	All identified Indigenous Nations and communities	On December 21, 2022, CNSC staff sent an email notification that OPG's PPE and EIS Review documents

Date	Indigenous Nation or community	Correspondence / Activity
		were available for review and comment on the *Let's Talk Nuclear Safety* website. CNSC staff also offered to meet to provide more information about the DNNP Licence to Construct application and discuss how each Indigenous Nation or community would like to be consulted.
February 2023	All identified Indigenous Nations and communities	On multiple dates in February 2023, CNSC conducted follow up phone calls and sent emails as a reminder that the CNSC was seeking feedback on OPG's two documents and offered to meet to discuss how the Indigenous Nation or community would like to be consulted moving forward throughout the DNNP, including on the applicability of the EA and the Licence to Construct application.
February 2023	All identified Indigenous Nations and communities	On February 16, 2023, CNSC staff sent email invitations to attend the CNSC staff-led DNNP public workshop on April 4, 2023. CNSC staff also offered to meet directly with each Indigenous Nation or community to discuss the DNNP and any questions or comments.
March 2023	All identified Indigenous Nations and communities	On March 9, 2023, CNSC staff sent reminder emails regarding the April DNNP workshop and offered to meet directly to discuss the DNNP and the role of the CNSC for the regulatory review process for the confirmation of the applicability of the EA to OPG's chosen technology and Licence to Construct application .
March and April 2023	Hiawatha First Nation Mississaugas Of Scugog Island First Nation	CNSC staff received written comments from the Mississaugas of Scugog Island First Nation, Hiawatha First Nation, and Saugeen Ojibway Nation on OPG's PPE and EIS

Date	Indigenous Nation or community	Correspondence / Activity
	Saugeen Ojibway Nation	Review documents. Comments received included questions and concerns related to the applicability of the EA as well as the licence to construct and the DNNP in general from the three First Nations listed in the column to the left. CNSC staff offered to meet with the Mississaugas of Scugog Island First Nation, Hiawatha First Nation, and Saugeen Ojibway Nation to discuss their concerns and comments further and address the concerns to the extent possible.
April 2023	Mississaugas Of Scugog Island First Nation Curve Lake First Nation Hiawatha First Nation Six Nations of the Grand River	On April 4, 2023, CNSC staff sent emails after the CNSC DNNP public workshop thanking the Indigenous Nations and communities who participated in the workshop for their participation and perspectives. CNSC staff also extended an offer for subsequent meetings to continue discussing the comments and concerns raised during the workshop and in their written submissions.
April 2023	All identified Indigenous Nations and communities	On April 3, 2023, CNSC staff sent email notifications that participant funding was available to support the review of CNSC staff's and OPG's CMD documentation, and support participation at the January 2024 Commission hearing regarding the applicability of the EA to OPG's chosen technology. CNSC staff also offered to meet to discuss the DNNP and the ongoing regulatory processes.
May 2023	All identified Indigenous Nations and communities	On May 17, 2023, CNSC staff sent an email reminder of the second stage of PFP available and the upcoming deadline for funding applications. CNSC staff also offered

Date	Indigenous Nation or community	Correspondence / Activity
		to meet to discuss the DNNP and the ongoing regulatory processes. On May 31, 2023, CNSC staff sent email notification of the CNSC staff June public webinar on the DNNP, including the Licence to Construct application and the applicability of the EA to OPG's chosen technology.
June 2023	Curve Lake First Nation Hiawatha First Nation	On June 16, 2023, CNSC staff hosted a public webinar to provide information on OPG's Licence to Construct application, an update on the CNSC's technical review, including the review of OPG's EIS and PPE and how to participate in the January 2024 public Commission hearing. Representatives from Curve Lake First Nation and Hiawatha First Nation attended the webinar.
August 2023	All identified Indigenous Nations and communities	On August 10, 2023, CNSC staff sent an invitation to CNSC's September 2023 Darlington Open public House held in Oshawa, Ontario. CNSC staff were available to discuss the CNSC's approach to regulation and oversight for Darlington Nuclear Generating Station, Darlington Waste Management Facility and the DNNP, including the Licence to Construct application and the applicability of the EA to OPG's chosen technology. The open house also provided an opportunity to answer any questions and discuss any comments or concerns related to the DNNP with CNSC staff. In the invitation, CNSC staff offered to meet directly with each Indigenous Nation and community to discuss the DNNP, if that was of interest.
October 2023	All identified Indigenous Nations and communities	On October 4, 2023, CNSC staff sent an invitation to the October 31st,

Date	Indigenous Nation or community	Correspondence / Activity
		2023 CNSC staff public webinar on the DNNP. On October 18, 2023, CNSC staff sent email notifications that participant funding (Stage 3) was available to support the review OPGs Licence to Construct application, to assist in the review of related documentation, and to support participation in a potential public hearing for the Commission to consider the application.
October 2023	Chippewas of Georgina Island First Nation Beausoleil First Nation Rama First Nation Mohawks of The Bay of Quinte Alderville First Nation	On multiple dates in October 2023, CNSC staff followed up with the Indigenous Nations and communities who had not recently responded to opportunities for consultation and engagement on the DNNP Licence to Construct application via phone call and email to offer to meet to discuss the regulatory review process for DNNP, including the applicability of the EA and an update on the CNSC's review of the Licence to Construct application and any comments or questions. No response was received from any of these Indigenous Nations or communities.
November 2023	All identified Indigenous Nations and communities	On multiple dates in November 2023 CNSC staff conducted follow up phone calls and sent emails as a reminder of the availability of the stage 3 of PFP funding. CNSC staff also offered to meet to discuss and consult on the DNNP Licence to Construct application, how to get involved and the CNSC's role.
January 2024	Curve Lake First Nation Hiawatha First Nation The Mississaugas of Scugog Island First Nation Saugeen Ojibway Nation	On January 23-25, 2024, Indigenous Nations and communities participated in the Commission's January 2024 hearing regarding the applicability of the EA to OPG's chosen technology.

Date	Indigenous Nation or community	Correspondence / Activity
March 2024	All identified Indigenous Nations and communities	On multiple dates in March 2024, CNSC staff conducted follow-up phone calls and emails or raised at regularly scheduled meetings, an offer to meet to discuss and consult on OPG's Licence to Construct application, technical review and any comments and questions regarding the DNNP. Additional details regarding the outcomes of this is included in the Nation specific tables in the subsections below.
April 2024	All identified Indigenous Nations and communities	On April 22, 2024, CNSC staff provided notification that the Commission had made a decision on the applicability of the environmental assessment to OPG's chosen technology for the DNNP. CNSC staff offered to set up a meeting to discuss the decision and next steps in the DNNP Licence to Construct application and consultation process. Additional details regarding the outcomes of this is included in the Nation specific tables below.

4.1 Consultation activities with the Mississaugas of Scugog Island First Nation

The Mississaugas of Scugog Island First Nation has reviewed and provided feedback on Section 4.1 of the Consultation Report. CNSC staff note that the issues and concerns listed in Section 4.1.2 are the views of Mississaugas of Scugog Island First Nation.

4.1.1 Background on Mississaugas of Scugog Island First Nation and Relationship with the CNSC

The Mississaugas of Scugog Island First Nation was included on all the key correspondence and opportunities for consultation and participation in the regulatory processes listed in Table 2 above. The Mississaugas of Scugog Island First Nation is a Mississauga Nation and is located approximately 50 km north of Oshawa, Ontario. The Mississaugas of Scugog Island First Nation has Indigenous and Treaty Rights under

section 35 of the *Constitution Act, 1982* and is a signatory to the Gunshot Treaty (1877-88), Williams Treaties (1923) and the Williams Treaties Settlement Agreement (2018). The Mississaugas of Scugog Island First Nation is actively engaged on all nuclear projects in their territory, including the DNNP. The Mississaugas of Scugog Island First Nation is located reserve community is located within the 50 km Ingestion Planning Zone for both the Pickering and Darlington Nuclear Generating Stations and will be for the DNNP.

CNSC staff and the Mississaugas of Scugog Island First Nation signed a ToR for long-term engagement in March 2022. Since receiving OPG's Licence to Construct application in November 2022, regularly scheduled meetings under the ToR have often been used to discuss and consult on the DNNP. Additionally, CNSC staff offered to have DNNP specific consultation meetings in addition to the regularly scheduled monthly meetings. CNSC staff have been having ongoing discussions with the Mississaugas of Scugog Island First Nation to better understand their project specific concerns and potential impacts to their Indigenous and/or Treaty Rights. Additional information about this and next steps are included in of this report and in the Mississaugas of Scugog Island First Nation specific issues tracking table in Appendix A.1. Key correspondence related to the consultation activities below is included in Appendix B.

Table 3: Summary of the key consultation activities the Mississaugas of Scugog Island First Nation

Date	Consultation Activity
June 2022	On June 10, 2022, CNSC staff and the Mississaugas of Scugog Island First Nation had a meeting to provide an update on the DNNP. Questions and concerns raised included requests for information on opportunities to participate in OPG's review of the Environmental Impact Statement and OPG's waste management strategy.
January 2023	On January 10, 2023, the Mississaugas of Scugog Island First Nation was awarded PFP to support the review of OPG's environmental impact statement and plant parameter envelope for OPG's DNNP as well as participate in meetings and workshops with the CNSC.
March 2023	On March 6, 2023, CNSC staff met with the Mississaugas of Scugog Island First Nation to discuss the history of the DNNP EA, a DNNP licensing review update, and an overview of OPG's EIS and PPE review findings. On March 20, 2023, the Mississaugas of Scugog Island First Nation submitted written comments on OPG's EIS review and PPE documents to the CNSC.

Date	Consultation Activity
April 2023	On April 4, 2023, the Mississaugas of Scugog Island First Nation attended the DNNP public workshop to discuss issues and concerns related to the DNNP. On April 4, 2023, CNSC staff followed up with the Mississaugas of Scugog Island First Nation following the workshop and offered to meet directly with the Mississaugas of Scugog Island First Nation to continue discussing concerns regarding the DNNP and next steps in the regulatory process. Although a meeting was originally scheduled, the Mississaugas of Scugog Island First Nation requested a response to their concerns be provided in writing instead.
July 2023	On July 11, 2023, Mississaugas of Scugog Island First Nation was awarded PFP to support reviewing the documentation on the applicability of the DNNP environmental assessment and plant parameter envelope to OPG's selected BWRX-300 small modular reactor technology, and in participating in the hearing process by providing topic-specific interventions to the Commission.
August 2023	On August 29, 2023, CNSC staff provided a written response with the CNSC's position with regards to the Mississaugas of Scugog Islands comments related to the applicability of the EA and offered to meet to continue to work to address concerns, answer questions and discuss next steps in the DNNP regulatory review process. On August 24, 2023, Mississaugas of Scugog Island First Nation sent an email to CNSC staff asking questions regarding the waste management plans for DNNP.
September 2023	On September 21, 2023, CNSC staff provided written responses to the Mississaugas of Scugog Island First Nation comments and concerns regarding the waste management plans for the DNNP.
October 2023	On October 17, 2023, CNSC staff and the Mississaugas of Scugog Island First Nation had a meeting to discuss the Mississaugas of Scugog Island First Nation concerns with regards to DNNP waste management and provide answers and responses. On the October 10, 2023, monthly meeting, the Mississaugas of Scugog Island First Nation, raised concerns about the EA follow up program for the DNNP, asking if it remains valid. On November 3, 2023, CNSC staff provided a written response and offered to meet to discuss further and work to address the concerns. CNSC staff also presented on the CNSC's RIA framework during this monthly meeting.

Date	Consultation Activity
	On October 11, 2023, CNSC staff followed up in email and provided additional information about the RIA process and examples of RIAs previously conducted by the CNSC.
October 2023 to January 2024	During regularly scheduled monthly meetings, CNSC staff and the Mississaugas of Scugog Island First Nation discussed the CNSC's RIA Framework with the goal of collaboratively drafting a Mississaugas of Scugog Island First Nation specific RIA for the DNNP Licence to Construct. Concerns regarding the RIA framework, including the timing and scope of the RIA and how cumulative effects would be considered in the assessment, were raised and discussed.
November 2023	On November 20, 2023, the Mississaugas of Scugog Island First Nation submitted an intervention for the DNNP hearing on the applicability of the EA. On November 21, 2023, CNSC staff and Mississaugas of Scugog Island First Nation had an in-person meeting with leadership, in their community. CNSC staff provided an overview of all nuclear facilities and activities in the Mississaugas of Scugog Island First Nation's Treaty territory, including the DNNP. CNSC staff and MSIFN staff and leadership discussed the DNNP, upcoming milestones and the comments and concerns that Mississaugas of Scugog Island First Nation had raised to date. This included discussions and consultation on Mississaugas of Scugog Island First Nation concerns about the RIA process, consent and OPG's Environmental Monitoring and Follow up Program. In addition, MSIFN leadership and the CNSC discussed the specific commitments that Mississaugas of Scugog Island First Nation are discussing with OPG to address their concerns in relation to potential impacts of the DNNP on their Rights and interests.
January 2024	On January 11, 2024, CNSC staff provided a written response to the Mississaugas of Scugog Island First Nation's RIA concerns raised at monthly meetings and outlined a proposed path forward. On January 11, 2024, the Mississaugas of Scugog Island First Nation sent a letter to the CNSC reiterating their concerns with the RIA process and highlighted additional concerns. On January 24, 2024, CNSC staff responded to this letter and offered to meet to discuss the content further and to collaborate on options and solutions moving forward. These letters are included in Appendix B and provide additional details regarding the concerns and the CNSC's response.

Date	Consultation Activity
	On January 23, 2024, Chief Kelly LaRocca of the Mississaugas of Scugog Island First Nation participated orally in the DNNP Commission hearing on the applicability of the EA.
January 2024 to May 2024	During regularly scheduled monthly meetings, CNSC staff and Mississaugas of Scugog Island First Nation continued to discuss how the Licence to Construct application for the DNNP may impact their Rights and interests, noting their concerns regarding the RIA framework. More information about Mississaugas of Scugog Island First Nation's views on this will be included in the supplemental consultation information to be submitted prior to the Licence to Construct Commission Part-2 hearing.
February and March 2024	On February 2, 2024, CNSC staff shared the report "*CNSC staff update on Consultation and Engagement with Indigenous Nations and communities on the Applicability of the Darlington New Nuclear Project (DNNP) Environmental Assessment to OPG's Chosen Technology"* that the Commission had requested during the January 23-25th, 2024 Commission hearings. CNSC staff noted that they would be looking to work collaboratively with the Mississaugas of Scugog Island First Nation in the coming months to update and refine the information for the DNNP Licence to Construct application, should the project proceed. On February 16, 2024, the Mississaugas of Scugog Island First Nation submitted a letter to the CNSC, outlining concerns with the report that the CNSC submitted to the Commission, as per the Commission's request for an update on consultation and engagement conducted since the submission of Staff's CMD. The Mississaugas of Scugog Island First Nation outlined their concerns that the report did not include the list of requests for mitigation and accommodation included in their oral and written interventions and that they did not have the opportunity to review the report before it being submitted to the Commission. CNSC staff responded by email and clarified the scope of the Commission's request and how the CNSC would work to address their concerns. On March 4, 2024, the Mississaugas of Scugog Island First Nation submitted a second letter regarding the requested update on consultation and engagement report submitted by CNSC staff to the Commission. During the March 12, 2024 monthly meeting, CNSC staff and the Mississaugas of Scugog Island First Nation continued to discuss the Commission's request for OPG and CNSC staff to submit updated reports regarding DNNP Indigenous engagement and consultation. CNSC staff reiterated the commitment to working together to address issues and concerns and ensure the Mississaugas of Scugog Island First Nation's views are reflected in the CNSC's

Date	Consultation Activity
	Consultation Report and CMD to be submitted to the Commission for the Licence to Construct application. On February 29, 2024, CNSC staff sought feedback from the Mississaugas of Scugog Island First Nation on a summary table of the issues and concerns that the Mississaugas of Scugog Island First Nation raised to date during the consultation process for the DNNP, including CNSC staff's and OPG's responses to the concerns. On February 19 2024, the Mississaugas of Scugog Island First Nation was awarded PFP to support reviewing the application from OPG for a licence to construct for the DNNP. This funding was also to assist in the review of related documentation and to support participation in a potential hearing for the Commission to consider the application.
March 2024	On March 22, CNSC staff offered to set up a DNNP specific consultation meeting, to discuss the Mississaugas of Scugog Island First Nation's issues and concerns and next steps in the process. The Mississaugas of Scugog Island First Nation's confirmed that they would be interested in this meeting once the Commissions decision on the applicability of the EA to OPG's chosen technology was issued by the Commission. On March 27, 2024, CNSC staff shared draft sections (Sections 2, 4, 4.1, 5, 6 and 7) of the Consultation Report for the Mississaugas of Scugog Island First Nation's review. CNSC staff provided information about the approach to reporting to the Commission, including tentative timelines for the submission of supplemental consultation information (including RIAs, updated issues tracking tables). On March 28, 2024, the Mississaugas of Scugog Island First Nation provided comments and feedback on the draft issues tracking table. CNSC staff offered to meet to discuss any of the Mississaugas of Scugog Island First Nation outstanding concerns. The Mississaugas of Scugog Island First Nation confirmed their preference was to receive a written response first, followed by meetings as necessary.
April 2024	On April 9, 2024, CNSC staff shared a draft of the DNNP Licence to Construct RIA (chapters 1 -4.1) with the Mississaugas of Scugog Island First Nation for their review and feedback. CNSC staff offered to meet to discuss and consult on the RIA and any outstanding issues or concerns. A meeting was help on May 13, 2024. At the April 9, 2024 Mississaugas of Scugog Island First Nation-CNSC monthly meeting, CNSC staff provided an overview of the status of the three documents (issues tracking table, Consultation Report and RIA) that the Mississaugas of Scugog Island First Nation was reviewing and providing feedback on as well as proposed next steps for consultation on the DNNP. CNSC staff noted that once the

Date	Consultation Activity
	Mississaugas of Scugog Island First Nation reviewed the initial version of the RIA and updated issues tracking table it would be beneficial to have a tri-party meeting between OPG, CNSC staff and the Mississaugas of Scugog Island First Nation to discuss any outstanding concerns, potential impacts on Rights and proposed mitigation to address the concerns. CNSC staff are in the process of setting up these meetings and additional information about the outcomes will be included in the CNSC's supplemental consultation submission. CNSC staff also reiterated that they were open to meeting with the Mississaugas of Scugog Island First Nation at any time to discuss any concerns about the proposed next steps for consultation on the DNNP. The Mississaugas of Scugog Island First Nation confirmed that their legal team would review the RIA at each stage. The Mississaugas of Scugog Island First Nation also provided an update on the Indigenous Knowledge Study that CNSC staff and OPG committed to supporting, indicating that it would likely be a multi-year study done jointly between the Mississauga Nations (the Mississaugas of Scugog Island First Nation, Curve Lake First Nation, Hiawatha First Nation and Alderville First Nation). On April 18, 2024, the Mississaugas of Scugog Island First Nation submitted comments on Sections 2, 4, 5, 6 and 7 of the Consultation Report to the CNSC. CNSC staff requested a meeting with the Mississaugas of Scugog Island First Nation to discuss their comments on the RIA process. This meeting occurred on May 13, 2024 (see below). On April 23, 2024, CNSC staff responded to the technical issues and concerns related to the DNNP that to the Mississaugas of Scugog Island First Nation indicated were outstanding. CNSC staff reiterated a commitment to working to address the concerns to the extent possible and offered to set up focused consultation meetings if there were specific topics MSIFN would like to discuss further. No response was received.
May 2024	On May 13, 2024, CNSC staff and the Mississaugas of Scugog Island First Nation met to discuss their comments on the RIA process. CNSC staff provide background information and context about the RIA process, indicating that CNSC staff will be required to make a recommendation to the Commission regarding the potential impacts on Indigenous and/or Treaty Rights from the DNNP Licence to Construct application to support the Commissions decision making. CNSC staff acknowledged that the timelines meant that the Indigenous Knowledge study currently being scoped out would not be completed to support the RIA that will be submitted prior to the Licence to Construct Part-2 hearing. However, CNSC staff reiterated that the RIA can be collaboratively updated with MSIFN at each

Date	Consultation Activity
	future licensing phase of the DNNP regulatory process, such as the Licence to Operate, should it proceed. CNSC staff also noted that the outcomes of the Indigenous Knowledge study and cumulative effects study help to inform an adaptive management approach and EA follow-up monitoring program, which will ensure the DNNP project and related activities would be protective of Rights and interests. CNSC staff and the Mississaugas of Scugog Island First Nation also discussed concerns related to what will be considered in scope for the Licence to Construct application and therefore the assessment of impacts to Rights. The Mississaugas of Scugog Island First Nation confirmed that their leadership's current preferred approach is to conduct the Indigenous Knowledge study in parallel to the DNNP regulatory process. CNSC staff also discussed opportunities to collaborate on the RIA, acknowledging Mississaugas of Scugog Island First Nation concerns with the process. CNSC staff noted that this could include the Mississaugas of Scugog Island First Nation drafting certain sections of the report, and holding additional meetings to discuss the assessment of severity of the potential impacts and mitigation measures. The Mississaugas of Scugog Island First Nation confirmed that they would discuss the information provided by the CNSC regarding the RIA process, sequencing and opportunities for collaboration internally and would then confirm how they would like to proceed. Additional information about the outcomes of this and the approach taken for the RIA will be included in supplemental submission provided to the Commission in advance of the Part-2 hearing. CNSC staff incorporated the comments from Mississaugas of Scugog Island First Nation and on May 21, 2024 shared an updated version of the CNSC's Consultation Report and issues tracking table on May 23, 2024 with the Mississaugas of Scugog Island First Nation to demonstrate how their feedback was addressed. CNSC staff also reiterated that the Mississaugas of Scugog Island First Nation could submit feedback on the CNSC's approach to consultation and OPG's engagement to date to include in the report, if interested. The Mississaugas of Scugog Island First Nation provided additional comments on the issues tracking table on June 10, 2024, and the Consultation Report on June 17, 2024.

4.1.2 Key Issues and Concerns raised by the Mississaugas of Scugog Island First Nation

Information regarding key issues and concerns raised by the Mississaugas of Scugog Island First Nation specific to the DNNP is summarized below. The detailed issues tracking table for the Mississaugas of Scugog Island First Nation is found in Appendix A.1. The specific row where the issue is discussed in Appendix A.1 is listed beside each bullet. Refer to this row in Appendix A.1 for additional context regarding the issue, CNSC staff's response, OPG's responses and status of the issue.

1. Concerns about the plans for waste management at the DNNP and the storage of nuclear waste in their treaty territory, including the Mississaugas of Scugog Island First Nation's request for the requirement to obtain consent from the Mississaugas of Scugog Island First Nation to build additional on-site nuclear waste facilities and store nuclear waste in the treaty territory. (Appendix A.1 rows #11, #13, #19, #20)
2. Concerns about the potential for the DNNP to impact the environment, including Species at Risk, impacts on fish and fish habitat and the terrestrial environment. The Mississaugas of Scugog Island First Nation is concerned about the existing measures (put in place by OPG) that aim to protect existing natural spaces on the DNNP lands. Due to inadequate information the Mississaugas of Scugog Island First Nation is unable to confirm the full extent of impacts, and unable to confirm if compensation measures are adequate. (Appendix A.1 rows #1, #4, #6, #9, #10)
3. Concern that the DNNP, if approved, will result in effects that will either directly or indirectly impact the Mississaugas of Scugog Island First Nation member's inherent, Aboriginal and Treaty Rights, including contribution to cumulative effects on their Aboriginal and Treaty Rights. (Appendix A.1 rows #7, #18)
4. Concerns regarding OPG's engagement on permits required for the DNNP, including that on past permits the Mississaugas of Scugog Island First Nation has not always been given all the information needed to assess impacts on Rights. (Appendix A.1 row #16)
5. Concerns regarding the proposed Environmental Assessment follow up program and the differences between CEAA 1992 and *Impact Assessment Act* (2019) [15] requirements. (Appendix A.1 rows #12, #14, #15)
6. Concerns that the WTFN were never consulted when the Darlington Nuclear Generating site and waste management facility was established and requests for OPG to be required to obtain their consent for the DNNP. (Appendix A.1 row #13)

The Mississaugas of Scugog Island First Nation have requested the following mitigation and accommodation measures:

1. The Commission require CNSC and OPG to fund an Indigenous Knowledge Study that is designed and undertaken by interested WTFN. (Appendix A.1 row #13)
2. The Commission require CNSC and OPG to work collaboratively with the Mississaugas of Scugog Island First Nation, Curve Lake First Nation and Hiawatha First Nation to co-develop and undertake a Cumulative Effects Assessment to understand how nuclear activities have cumulatively impacted our territories, and our ability to exercise our Inherent, Aboriginal and Treaty Rights. (Appendix A.1 #18)
3. The Commission require CNSC to work collaboratively with the Nations to develop and undertake a RIA, that, at a minimum is informed by the Gap Analysis, Indigenous Knowledge Study, and Cumulative Effects Assessment. (Appendix A.1 #7, #18)
4. The Commission require OPG to work collaboratively with the Nations to co-develop, implement and participate in any Environmental Monitoring Plan or Program for the Darlington New Nuclear Project. (Appendix A.1 #12)
5. Ensure OPG engages and consults with the Mississaugas of Scugog Island First Nation, Curve Lake First Nation and Hiawatha First Nation on other Federal and Provincial permits related to the DNNP of interest to the Nations (Appendix A.1 row #4 and #6)
6. Ensure OPG provides the Mississaugas of Scugog Island First Nation, Curve Lake First Nation and Hiawatha First Nation with information that has been requested to inform the assessment of impacts on Michi Saagig Rights. (Appendix A.1 row #16)

The Mississaugas of Scugog Island First Nation has also made the following requests and are of the view that they remain unresolved. CNSC staff are committed to working with the Mississaugas of Scugog Island First Nation and OPG to resolve and address these requests and concerns.

1. The CNSC require OPG to obtain consent from the Mississaugas of Scugog Island First Nation and other WTFN for the Project prior to issuing a license to construct. (Appendix A.1 row #13)
2. The CNSC require OPG to work collaboratively with WTFN to develop and undertake a gap analysis to understand how the impacts of the DNNP, including the BWRX-300 SMR technology would be understood through current standards and the WTFN settlement agreement, utilizing the IAA as a foundational standard for inclusion of Indigenous Knowledge into the analysis and to ensure Indigenous participation in decision making. (Appendix A.1 row #15)
3. The CNSC and OPG provide the Mississaugas of Scugog Island First Nation with greater clarity and a plan for nuclear waste, including waste that could be produced by the DNNP, as well as obtain consent from MSIFN and other WTFN for the storage of new nuclear waste, including waste that could be produced by the DNNP. (Appendix A.1 row #11)

4. The CNSC mandate a follow-up program (in line with the current IAA framework) to be completed by OPG in collaboration with interested WTFNs. The Mississaugas of Scugog Island First Nation request that CNSC and OPG work collaboratively with WTFN to develop and undertake a Cumulative Effects Assessment, as part of an EA Follow-up Program consistent with the approach of the IAA, to understand how nuclear activities have cumulatively impacted our territories, and MSIFN's ability to exercise our Inherent, Aboriginal and Treaty Rights. (Appendix A.1 row #12)
5. The CNSC and OPG Commit to Meeting with Leadership to Review International Best Practices for the management and storage of used nuclear fuel at reactor sites with current practices at the Darlington site. (Appendix A.1 row #11)
6. The CNSC require OPG to establish a restoration fund that would facilitate projects on lands within and outside of OPG Darlington's site control, in collaboration with First Nations, and other governments. (Appendix A.1 row #6)

4.1.3 CNSC staff's response

CNSC staff acknowledge the issues and concerns that the Mississaugas of Scugog Island First Nation has raised to date related to the DNNP. CNSC staff have worked to understand, assess and address the concerns to the greatest extent possible by having focused discussions and consultation, providing detailed responses, reflecting the Mississaugas of Scugog Island First Nation's views in CNSC's documentation (including this report, issues tracking table and the RIA) and communicating the Mississaugas of Scugog Island First Nation's concerns to OPG.

CNSC staff have made initial commitments (listed below) to address some of the concerns raised to date. CNSC staff are committed to working with the Mississaugas of Scugog Island First Nation through the RIA process and further consultation on the DNNP Licence to Construct application to identify additional commitments, mitigations and addressing the concerns related to the DNNP Licence to Construct application, as appropriate. CNSC staff will strive to achieve a consensus and resolution on issues related to the DNNP Licence to Construct application in advance of the Part-2 hearing. The outcomes of this and a final list of commitment made by the CNSC will be included in the CNSC's supplemental submission to the Commission.

Information regarding specific responses to each of the Mississaugas of Scugog Island First Nation's concerns are included in the issues tracking table found in Appendix A.1.

In summary, CNSC staff are committed to:

1. Continuing to discuss the requests for mitigation and accommodation, as appropriate, that MSIFN has raised, including with OPG as appropriate.
2. Collaborating with the Mississaugas of Scugog Island First Nation and interested WTFN and OPG on supporting an Indigenous Knowledge Study specific to the DNNP to help gather more specific Indigenous Knowledge and data regarding WTFN Rights and interests that could be potentially impacted by the DNNP and

other projects in the treaty territory. The results of these studies can then help to inform an adaptive management approach and OPG's EA follow-up monitoring program, such that the DNNP construction and related activities would be protective of their Rights and interests, should the DNNP proceed.

3. CNSC staff are supportive of OPG and potentially impacted WTFN working collaboratively on the scoping and implementation of a cumulative effects study. CNSC staff are open to providing funding and supporting this study to help inform OPG's EA follow-up monitoring program and future RIAs as appropriate.
4. Ongoing engagement and consultation with the Mississaugas of Scugog Island First Nation for this Project including discussions through the ToR for long-term engagement between the CNSC and the Mississaugas of Scugog Island First Nation, as well as ongoing involvement of the Mississaugas of Scugog Island First Nation in the CNSC's Independent Environmental Monitoring Program (IEMP) and collaboration on ongoing oversight of commitments and protection of the environment and their Rights and interests for the broader Darlington Site.

CNSC staff are aware that OPG has been engaging with the Mississaugas of Scugog Island First Nation to better understand their concerns and work on collaborative ways to address or mitigate the concerns. In response to the request for mitigation and accommodation raised at the January 23-25, 2024 Commission hearing on the applicability of the DNNP EA to OPG's chosen technology , CNSC staff are aware that OPG has committed to continuing to discuss with MSIFN:

1. The potential for a restoration fund;
2. Updating their environmental monitoring program to consider and reflect new best practices and standards, such as incorporating Indigenous Knowledge and;
3. Providing additional clarity on waste management and scoping MSIFN's request for a review of international best practices for management and storage of nuclear waste.

CNSC staff are aware that OPG is working with interested WTFN, including the Mississaugas of Scugog Island First Nation to support an Indigenous Knowledge Study. CNSC staff understand that OPG is currently working with interested WTFN to scope the study and plan to begin implementation by the end of 2024.

CNSC staff encourages OPG to continue discussions and collaboration with the Mississaugas of Scugog Island First Nation to address their concerns regarding waste management, cumulative and legacy effects, including collaboration on the scoping of a potential cumulative effects study as it relates to the DNNP and other OPG nuclear operations in WTFN's territory. CNSC staff anticipate receiving an update from OPG on their engagement efforts, in an Indigenous Engagement Report to be filed on the record, as per the Commission's Record of Decision – Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment, issued 22 April 2024.

4.1.4 Conclusions

CNSC staff are committed to continuing to work collaboratively with the Mississaugas of Scugog Island First Nation and OPG in advance of the DNNP Licence to Construct Part-2 hearing to address the concerns and requests related to the DNNP Licence to Construct application they have raised to date. This includes aiming to collaborate on the CNSC-led RIA. CNSC staff are also committed to providing oversight of OPG efforts to follow through and implement commitments made to date to address the Mississaugas of Scugog Island First Nation specific requests and concerns. Updated information about the potential impacts of the DNNP Licence to Construct application on the Mississaugas of Scugog Island First Nation's Indigenous and/ or Treaty Rights and mitigation and/ or accommodation measures to address any identified impacts will be included in the supplemental submission, to be provided to the Commission prior to the Licence to Construct Part-2 hearing.

4.2 Consultation activities with Curve Lake First Nation

Curve Lake First Nation has reviewed and provided feedback on Section 4.2 of the Consultation Report. CNSC staff note that the issues and concerns listed in Section 4.2.2 are the views of Curve Lake First Nation.

4.2.1 Background on Curve Lake First Nation and Relationship with the CNSC

Curve Lake First Nation was included on all key correspondence, communications and opportunities for consultation and participation in the regulatory processes as listed in Table 2 above. Curve Lake First Nation people are the Michi Saagig or Mississaugas of the great Anishinaabe nation. Curve Lake First Nation is located approximately 25 km north of Peterborough Ontario. Curve Lake First Nation has Indigenous and Treaty Rights under section 35 of the *Constitution Act, 1982* and is a signatory to the Gunshot Treaty (1877-88), Williams Treaties (1923) and the Williams Treaties Settlement Agreement (2018). Curve Lake First Nation is actively engaged on all nuclear projects in their territory, including the DNNP.

CNSC staff and Curve Lake First Nation signed a ToR for long-term engagement in February 2021 and have monthly meetings where CNSC staff and representatives from Curve Lake First Nation discuss key projects and activities of interest including the DNNP. Since receiving OPG's Licence to Construct application in November 2022, regularly scheduled meetings under the ToR have frequently been used to share information, engage and consult on the DNNP. Additionally, CNSC staff offered to have DNNP specific and consultation meetings in addition to the regularly scheduled meetings with Curve Lake First Nation. CNSC staff continue to have ongoing discussions with Curve Lake First Nation to better understand their project specific concerns and potential impacts to their Indigenous and/or Treaty Rights. Key correspondence related to the consultation activities below is included in Appendix B.

Table 4 Summary of the key consultation activities with Curve Lake First Nation

Date	Consultation Activity
March 2023	March 2, 2023, meeting between CNSC staff, Curve Lake First Nation, Hiawatha First Nation and OPG to discuss the history of the DNNP EA, OPG's conclusions in the EIS review and PPE documents, next steps in the regulatory process as well as any initial comments or concerns. CNSC staff also highlighted the desire to work with Curve Lake First Nation and Hiawatha First Nation to create a mutually agreeable consultation plan for the DNNP.
April 2023	On April 4, 2023, Curve Lake First Nation attended the CNSC's DNNP public workshop. On April 4, 2023, CNSC staff followed up with Curve Lake First Nation following the workshop and offered to meet directly with Curve Lake First Nation to continue discussing concerns and comments regarding the DNNP and next steps in the regulatory process.
June 2023 to December 2023	During regularly scheduled monthly meetings, CNSC staff and Curve Lake First Nation discussed the CNSC's RIA Framework with the goal of collaboratively drafting a Curve Lake First Nation specific RIA for the DNNP Licence to Construct application. CNSC staff provided ongoing opportunities for Curve Lake First Nation to discuss specific impacts to Rights from the DNNP, including through meetings and written submission (including comments and interventions). Additional information regarding the identified potential impacts on Rights will be included in the RIA, to be submitted to the Commission in advance of the Licence to Construct Part-2 hearing.
November 2023	November 16, 2023, meeting between Curve Lake First Nation and CNSC staff to discuss approach to assessing cumulative effects and provided information about how cumulative effects were considered during the DNNP EA. On November 20, 2023, Curve Lake First Nation submitted an intervention for the DNNP Commission hearing regarding the applicability of the EA to OPG's chosen technology for the DNNP.
December 2023	On December 11, 2023, CNSC staff had an in-person meeting with Curve Lake First Nation representatives, in their community. CNSC staff provided updates on and an overview of all nuclear facilities and activities in their Treaty territory, including consultation on the DNNP. CNSC staff, and Curve Lake First Nation discussed the DNNP, upcoming milestones and the comments and concerns that Curve Lake First Nation had raised to date. These discussions

Date	Consultation Activity
	included updates from Curve Lake First Nation on the specific commitments that they are discussing with OPG in order to address the concerns they are raising in relation to potential impacts of the DNNP Licence to Construct application on their Rights and interests. On December 7, 2023, Curve Lake First Nation was awarded PFP to support meeting with CNSC staff to discuss the applicability of the environmental assessment to OPG's selected reactor technology for the DNNP, and to support participation in the January 2024 public Commission hearing.
January 2024	On January 5, 2024, CNSC staff provided a written response to Curve Lake First Nation's concerns regarding the RIA process and outlined a proposed path forward. On January 23, 2024, Curve Lake First Nation participated in the DNNP Commission hearing on the applicability of the EA.
January 2024 to May 2024	During regularly scheduled monthly meetings, CNSC staff and Curve Lake First Nation continued to discuss and consult on how the decision on the Licence to Construct application for the DNNP may impact their Rights and interests, noting the limitations due to current existing gaps in information regarding their Rights, interests and land/water use in the vicinity of the Darlington site. Curve Lake First Nation reiterated their commitment to work on a collaborative RIA and indicated that CNSC staff could write the first draft of the assessment for Curve Lake First Nation to review. However, Curve Lake First Nation indicated that their view was it would be preliminary until an Indigenous Knowledge study was completed.
February 2024	On February 2, 2024, CNSC staff shared the *CNSC staff update on Consultation and Engagement with Indigenous Nations and communities on the Applicability of the Darlington New Nuclear Project (DNNP) Environmental Assessment to OPG's Chosen Technology* report that the Commission had requested during the January 2024 Commission hearing regarding the applicability of the EA to OPG's chosen technology. CNSC staff noted that they would be looking to work collaboratively with the Curve Lake First Nation in the coming months to update and refine the information for the DNNP Licence to Construct application, should the project proceed. On February 9, 2024, during the consultation process, CNSC staff sought feedback from Curve Lake First Nation on a summary table of the issues and concerns that Curve Lake First Nation has raised regarding the DNNP to date, including CNSC staff's and OPG's responses.

Date	Consultation Activity
	On February 15, 2024, CNSC staff provided an update on the drafting of the RIA and Curve Lake First Nation indicated agreement with CNSC staff's proposed approach. Curve Lake First Nation provided feedback on the January 2024 Commission hearing regarding the applicability of the EA to OPG's chosen technology", which included the need to adapt Commission proceedings to be more inline with the First Nations communication style and not placing time limits on the speakers. On February 19, 2024, Curve Lake First Nation was awarded PFP to support reviewing the application from OPG for a licence to construct for the DNNP. This funding was also to assist in the review of related documentation and to support participation in a potential hearing for the Commission to consider the application.
March 2024	On March 21, 2024, CNSC staff provided an update on next steps and tentative timelines for consultation on the DNNP and regulatory process, including that CNSC staff would be sharing drafts of the RIA and sections of CNSC staff's Consultation Report for their review. CNSC staff reiterated that a separate DNNP consultation meeting could be set up to discuss the CNSC's review of the Licence to Construct application and any issues or concerns. On March 27, 2024, CNSC staff shared draft sections (Sections 2, 4, 4.2, 5, 6 and 7) of the Consultation Report for Curve Lake First Nation's review and followed up on the issues tracking table shared on February 9, 2024. CNSC staff provided information about the approach to reporting to the Commission, including tentative timelines for the submission of supplemental information (RIAs, updated issues tracking tables).
April 2024	On April 9, 2024, CNSC staff shared a draft of the DNNP Licence to Construct RIA (chapters 1 -4.1) with Curve Lake First Nation for their review and feedback. CNSC staff noted that once the Curve Lake First Nation reviewed the initial version of the RIA and updated issues tracking table it would be beneficial to have a tri-party meeting between OPG, CNSC staff and Curve Lake First Nation to discuss any outstanding concerns, potential impacts on Rights and proposed mitigation to address the concerns. CNSC staff are in the process of setting up these meetings and additional information about the outcomes will be included in the CNSC's supplemental consultation submission. CNSC staff also reiterated that they were open to meeting with Curve Lake First Nation at any time to discuss any concerns about the proposed next steps for consultation on the DNNP. During the April 18, 2024, monthly meeting with Curve Lake First Nation and CNSC staff, Curve Lake First Nation confirmed they received the consultation report, issues tracking table and draft RIA.

Date	Consultation Activity
	Curve Lake First Nation confirm they would be reviewing the documents and providing feedback. CNSC staff noted that the Consultation Report and issues tracking table would need to be finalized and posted in early June. CNSC staff reiterated that the RIA will not need to be finalized until later, in order to allow for additional time for consultation and collaboration.
May 2024	During the May 16, 2024 monthly meeting with Curve Lake First Nation, CNSC staff Curve Lake First Nation discussed the DNNP issues tracking table and consultation report. Curve Lake First Nation confirmed they were reviewing the documents and would be providing feedback. CNSC staff followed up with an email on May 17th and provided updated copies of the Consultation Report and issues tracking table for Curve Lake First Nation to review. Curve Lake First Nation provided feedback on the DNNP Consultation Report on May 31, 2024, and June 17, 2024.

4.2.2 Key Issues and Concerns raised by Curve Lake First Nation

Key issues and concerns raised by Curve Lake First Nation specific to the DNNP to date are summarized below. The detailed issues tracking table for Curve Lake First Nation is found in Appendix A.2. The specific row where the issue is discussed in Appendix A.2 is listed beside each bullet. Refer to this row in Appendix A.2 for additional context regarding the issue, CNSC staff's response, OPG's responses and current status of the issue.

1. Concerns about the need to include and consider Indigenous worldviews, cultural keystone species and impacts to Michi Saagiig Rights in the regulatory process for the DNNP project. (Appendix A.2 row #4)
2. Concerns regarding the approach to a DNNP specific RIA and gaps in the ability to fully identify, understand and address impacts on Rights. Curve Lake First Nation notes that the RIA should be informed by the Indigenous Knowledge study and cumulative effects study. (Appendix A.2 rows #1, #2)
3. Concern regarding the DNNP contributing to the cumulative effects from the Darlington and Pickering Nuclear Generating Stations on the environment and their Rights. (Appendix A.2 row #5)
4. Concerns that the construction of the DNNP may impact their Indigenous and Treaty Rights, including but not limited to: impacts to fishing, hunting, and harvesting, impacts to spiritual landscapes, and impacts to species and places of cultural significance. (Appendix A.2 row #3)
5. Concerns regarding the approach to consultation for the DNNP, including about how they will be meaningfully consulted throughout the DNNP process

when decisions that could impact their Rights are being made. Curve Lake First Nation's view is that meaningful consultation has not occurred as no mutual understanding on the potential impacts to Rights has been reached. (Appendix A.2 row #6)

6. Concerns about the regulatory review process and legislative framework used to assess the DNNP. Curve Lake First Nation's view is that the DNNP regulatory process should include the standards and principles under the 2019 IAA. (Appendix A.2 row #7)
7. Concerns about the potential for the DNNP to impact the environment. Curve Lake First Nation notes that any impacts to the environment regardless of their Western-perceived severity, represent potential and often real impacts to Inherent, Aboriginal and Treaty Rights. (Appendix A.2 row #8)

Curve Lake First Nation has made a number of requests for accommodation and mitigations, including for an Indigenous knowledge study, gap analysis, cumulative effects assessment, RIA and greater involvement in the environmental monitoring and follow up program.

4.2.3 CNSC staff's response

CNSC staff acknowledge the issues and concerns that Curve Lake First Nation has raised to date related to the DNNP. CNSC staff have worked to understand, assess and address the concerns to the greatest extent possible by having focused discussions, consultation, providing detailed responses, reflecting Curve Lake First Nation's views in CNSC's documentation, communicating Curve Lake First Nation's concerns to OPG and discussing the DNNP at regularly scheduled meetings with Curve Lake First Nation to better understand their concerns and identify commitments, mitigations and a path forward to addressing the concerns. CNSC staff's view is that the approach to consultation conducted for the DNNP Licence to Construct application has been in line with best practices and is flexible based on the specific needs and requests of each potentially impacted Indigenous Nation and community. CNSC staff have and will continue to provide opportunities for Curve Lake First Nation to provide input and feedback on how they would like to be consulted for the DNNP and what would be meaningful for them.

CNSC staff have made initial commitments (listed below) to address some of the concerns raised to date. CNSC staff are committed to working with Curve Lake First Nation through the RIA process and further consultation on the DNNP Licence to Construct application to identify additional commitments, mitigations and a path forward to addressing the concerns related to the DNNP Licence to Construct application, as appropriate. CNSC staff are striving to achieve a consensus and resolution on issues related to the DNNP Licence to Construct application in advance of the Part-2 hearing. The outcomes of this and a final commitment list will be included in the CNSC's supplemental submission to the Commission.

Information regarding specific responses to each of Curve Lake First Nation's concerns are included in the issues tracking table found in Appendix A.2.

In summary, CNSC staff are committed to:

1. Continuing to consult on the requests for mitigation and accommodation, as appropriate, that Curve Lake First Nation has raised, including with OPG as appropriate.
2. Collaborating and consulting with Curve Lake First Nation and interested WTFN on supporting an Indigenous Knowledge study specific to the DNNP to help gather more specific Indigenous Knowledge information and data regarding WTFN Rights and interests that could be potentially impacted by the DNNP and other projects in the treaty territory. The results of these studies can then help to inform an adaptive management approach and OPG's EA follow-up monitoring program, such that the DNNP construction and related activities would be protective of their Rights and interests, should the DNNP proceed.
3. CNSC staff are supportive of OPG and potentially impacted WTFN working collaboratively on the scoping and implementation of a cumulative effects study. CNSC staff are open to supporting this study to help inform OPG's EA follow-up monitoring program and future RIAs as appropriate.
4. Ongoing engagement and consultation with Curve Lake First Nation for this Project including discussions through the ToR for long-term engagement between the CNSC and Curve Lake First Nation, as well as ongoing Curve Lake First Nation involvement in the CNSC's IEMP and collaboration on ongoing oversight of commitments and protection of the environment and their Rights and interests for the broader Darlington Site.

CNSC staff are aware that OPG has been engaging with Curve Lake First Nation to better understand their concerns and work on collaborative ways to address or mitigate the concerns. CNSC staff are aware that OPG is working with interested WTFN, including Curve Lake First Nation to support an Indigenous Knowledge and Land use study. CNSC staff understand that OPG is currently working with interested WTFN to scope the study and plan to begin implementation by the end of 2024. OPG has also begun discussing opportunities for greater involvement in environmental protection and environmental monitoring.

CNSC staff encourages OPG to continue discussions and collaboration with Curve Lake First Nation to address their concerns regarding cumulative and legacy effects, including collaboration on the scoping of a potential cumulative effects study as it relates to the DNNP and other OPG nuclear operations in WTFN's territory. CNSC staff anticipate receiving an update from OPG on their engagement efforts, in an Indigenous Engagement Report to be filed on the record, as per the Commission's Record of Decision – Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment, issued 22 April 2024.

4.2.4 Conclusions

CNSC staff are committed to continuing to engage, consult and work collaboratively with Curve Lake First Nation and OPG in advance of the DNNP Licence to Construct Part-2 hearing to address the concerns and requests related to the DNNP Licence to Construct application they have raised to date. This includes collaborative work on the RIA and to address their issues and concerns raised to date. CNSC staff are also committed to providing oversight of OPG efforts to follow through and implement the commitments made to address Curve Lake First Nation's specific requests and concerns. Updated information about the potential impacts of the DNNP Licence to Construct application on Curve Lake First Nation's Indigenous and/ or Treaty Rights and mitigation and/ or accommodation measures to address any identified impacts will be included in the supplemental submission, to be submitted to the Commission prior to the Licence to Construct Part-2 hearing.

4.3 Consultation activities with Hiawatha First Nation

CNSC staff shared the Consultation Report with Hiawatha First Nation and provided multiple opportunities for review and feedback. On June 26, 2024 Hiawatha First Nation provided high level comments. Due to the timing of submission of the comments, CNSC staff were unable to make substantive updates to this version of the Consultation Report. However, Hiawatha First Nation and CNSC staff confirmed that the comments would be incorporated and reflected in the supplemental submission, in advance of the Part 2 hearing on the DNNP licence to construct application.

CNSC staff note that the issues and concerns listed in Section 4.3.2 are the views that Hiawatha First Nation has previously expressed, through written and oral submissions to the CNSC.

4.3.1 Background on Hiawatha First Nation and Relationship with the CNSC

Hiawatha First Nation was included on all the key correspondence and opportunities for consultation and participation in the regulatory processes listed in Table 2 above.

Hiawatha First Nation is a Mississauga Nation and is located approximately 30 km south of Peterborough, Ontario. Hiawatha First Nation has Indigenous and Treaty Rights under section 35 of the *Constitution Act, 1982* and is a signatory to the Gunshot Treaty (1877-88), Williams Treaties (1923) and the Williams Treaties Settlement Agreement (2018).

Hiawatha First Nation is actively engaged on all nuclear projects in their territory, including the DNNP. CNSC staff and Hiawatha First Nation signed a ToR for long-term engagement in May 2023. Since then, regularly scheduled meetings under the ToR have frequently been used to discuss and consult on the DNNP. Additionally, CNSC staff offered to have DNNP specific consultation meetings and/ or activities in addition to the regularly scheduled meetings. CNSC staff have been having ongoing discussions with

Hiawatha First Nation to better understand their project specific concerns and potential impacts to their Indigenous and/or Treaty Rights. Key correspondence related to the consultation activities listed below is included in Appendix B.

Table 5: Summary of the key consultation activities with Hiawatha First Nation

Date	Consultation Activity
January 2023	On January 10, 2023 Hiawatha First Nation was awarded PFP to support the review of OPG's environmental impact statement and plant parameter envelope for OPG's DNNP as well as participate in meetings and workshops with the CNSC.
March 2023	March 2, 2023, meeting between CNSC staff, Curve Lake First Nation, Hiawatha First Nation and OPG to discuss the history of the DNNP EA, OPG's conclusions in the EIS review and PPE documents, next steps in the regulatory process as well as any initial comments or concerns. CNSC staff also highlighted the desire to work with Curve Lake First Nation and Hiawatha First Nation to create a mutually agreeable consultation plan for the DNNP. On March 20, 2023, Hiawatha First Nation submitted written comments on OPG's EIS review and PPE documents to the CNSC
April 2023	On April 4, 2023, Hiawatha First Nation attended the CNSC's DNNP public workshop. On April 4, 2023, CNSC staff followed up with Hiawatha First Nation following the workshop and offered to meet directly with Hiawatha First Nation to continue discussing their concerns regarding the DNNP and next steps in the regulatory process.
June 2023 to December 2023	During regularly scheduled monthly meetings, CNSC staff consulted Hiawatha First Nation on the CNSC's RIA (RIA) Framework with the goal of collaboratively drafting a Hiawatha First Nation specific RIA for the DNNP Licence to Construct. CNSC staff provided ongoing opportunities for Hiawatha First Nation to discuss specific impacts to Rights in relation to the DNNP.
July 2023	On July 11, 2023 Hiawatha First Nation was awarded PFP to support reviewing the documentation on the applicability of the DNNP environmental assessment and plant parameter envelope to OPG's selected BWRX-300 small modular reactor technology, and in participating in the hearing process by providing topic-specific interventions to the Commission.
November 2023	November 16, 2023, meeting between Hiawatha First Nation and CNSC staff to discuss the approach to assessing cumulative effects

Date	Consultation Activity
	and provided information about how cumulative effects were considered during the DNNP EA. On November 20, 2023, Hiawatha First Nation submitted an intervention for the DNNP Commission hearing regarding the applicability of the EA to OPG's chosen technology for the DNNP.
December 2023	On December 11, 2023, CNSC staff had an in-person meeting with Hiawatha First Nation, in their community. CNSC staff provided an overview of all nuclear facilities and activities in their Treaty territory, including the DNNP. CNSC staff consulted with Hiawatha First Nation on the DNNP, upcoming milestones and the comments and concerns that Hiawatha First Nation had raised to date. These discussions included updates from Hiawatha First Nation on the specific commitments that they are discussing with OPG in order to address the concerns being raised in relation to potential impacts of the DNNP on their Rights and interests.
January 2024	On January 5, 2024, CNSC staff provided a written response to Hiawatha First Nation's concerns regarding the RIA process and outlined a proposed path forward. On January 23, 2024, Hiawatha First Nation participated in the DNNP Commission hearing on the applicability of the EA.
January 2024 to May 2024	During regularly scheduled monthly meetings, CNSC staff and Hiawatha First Nation continued to discuss how the decision on the Licence to Construct application for the DNNP may impact their Rights and interests, noting the limitations due to current existing gaps in information regarding their Rights, interests and land/water use in the vicinity of the Darlington site. Hiawatha First Nation reiterated their commitment to work on a collaborative RIA and indicated that CNSC staff could write the first draft of the assessment for Hiawatha First Nation to review. However, Hiawatha First Nation indicated that their view was that the RIA would be preliminary until an Indigenous Knowledge study was completed.
February 2024	On February 2, CNSC staff shared the *CNSC staff update on Consultation and Engagement with Indigenous Nations and communities on the Applicability of the Darlington New Nuclear Project (DNNP) Environmental Assessment to OPG's Chosen Technology* report that the Commission had requested during the January 23-25th, 2024 DNNP Commission hearings. CNSC staff noted that they would be looking to consult and work collaboratively with the Hiawatha First Nation in the coming months to update and refine the information for the DNNP Licence to Construct application, should the project proceed.

Date	Consultation Activity
	On February 9, 2024, CNSC staff sought feedback from Hiawatha First Nation on a summary table of the issues and concerns that Hiawatha First Nation has raised regarding the DNNP to date, including CNSC staff's and OPG's responses. On February 15, 2024, CNSC staff provided an update on the drafting of the RIA and Hiawatha First Nation indicated agreement with CNSC staff's proposed approach. Hiawatha First Nation provided feedback on the January 2024 DNNP Commission hearing, which included the need to adapt Commission proceedings to be more in line with the First Nations communication style and not placing time limits on the speakers. On February 19, 2024 Hiawatha First Nation was awarded PFP to support reviewing the application from OPG for a licence to construct for the DNNP. This funding was also to assist in the review of related documentation and to support participation in a potential hearing for the Commission to consider the application.
March 2024	As part of the consultation process, on March 21, 2024, CNSC staff provided an update on next steps and tentative timelines for the DNNP, including that CNSC staff would be sharing drafts of the RIA and sections of the Consultation Report for their review. CNSC staff reiterated that a separate DNNP consultation meeting could be set up to discuss the CNSC's review of the Licence to Construct application and any issues or concerns. To date, Hiawatha First Nation has not responded to this offer. On March 27, 2024, CNSC staff shared draft sections (Sections 2, 4, 4.3, 5, 6 and 7) of CNSC staff's Consultation Report for Hiawatha First Nations review and followed up on the issues tracking table shared on February 9, 2024. CNSC staff provided information about the approach to reporting to the Commission, including tentative timelines for the submission of supplemental information (including finalized RIAs, updated issues tracking tables).
April 2024	On April 9, 2024, CNSC staff shared a draft of the DNNP Licence to Construct RIA (chapters 1 -4.1) with Hiawatha First Nation for their review and feedback. CNSC staff noted that once the Hiawatha First Nation reviewed the initial version of the RIA and updated issues tracking table it would be beneficial to have a tri-party meeting between OPG, CNSC staff and Hiawatha First Nation to discuss any outstanding concerns, potential impacts on Rights and proposed mitigation to address the concerns related to the DNNP. CNSC staff are in the process of setting up these meetings and additional information about the outcomes will be included in the CNSC's supplemental consultation submission.

Date	Consultation Activity
	During the April 18, 2024 monthly meeting with Hiawatha First Nation and CNSC staff, Hiawatha First Nation confirmed they received the consultation report, issues tracking table and draft RIA. Hiawatha First Nation confirm they would be reviewing the documents and providing feedback. CNSC staff noted that the Consultation Report and issues tracking table would need to be finalized and posted in early June. CNSC staff reiterated that the RIA will not be posted until later in order to allow for additional time for consultation and collaboration.
May 2024	During the May 16, 2024 monthly meeting with Hiawatha First Nation, CNSC staff and Hiawatha First Nation discussed the DNNP issues tracking table and consultation report. Hiawatha First Nation confirmed they were reviewing the documents and would be providing feedback. On May 17 2024, CNSC staff followed up with an email and provided updated copies of the CNSC's Consultation Report and issues tracking table for Hiawatha First Nation to review.
June 2024	On June 26 2024, Hiawatha First Nation provide high level comments on the DNNP Consultation Report and issues tracking table. CSNC staff and Hiawatha First Nation discussed the approach to reflecting these comments, noting that due to the timing of submission, substantive updates to the Consultation Report would not be possible. Hiawatha First Nation and CNSC staff confirmed that the comments would be incorporated and reflected in the supplemental submission, in advance of the Part 2 hearing on the DNNP licence to construct.

4.3.2 Key Issues and Concerns raised by Hiawatha First Nation

Key issues and concerns raised by Hiawatha First Nation specific to the DNNP are summarized below. The detailed issues tracking table for Hiawatha First Nation is found in Appendix A.3 The specific row where the issues is discussed in Appendix A.3 is listed beside each bullet. Refer to this row in Appendix A.3 for additional context regarding the issue, CNSC staff's response, OPG's responses and current status of the issue.

1. Concerns about the need to include and consider Indigenous worldviews, cultural keystone species and impacts to Michi Saagiig Rights in the regulatory process for the DNNP project. (Appendix A.3, row #4)
2. Concerns regarding the approach to a DNNP specific RIA gaps in the ability to fully identify, understand and address impacts on Rights. Hiawatha First Nation notes that the RIA should be informed by the Indigenous Knowledge study and cumulative effects study. (Appendix A.3, row #1, #2,)

3. Concerns regarding the DNNP contributing to the cumulative effects of the Darlington and Pickering Nuclear Generating Station. (Appendix A.3, row #5)
4. Concerns that the construction of the DNNP may impact their Indigenous and Treaty Rights, including but not limited to: impacts to fishing, hunting, and harvesting, impacts to spiritual landscapes, and impacts to species and places of cultural significance. (Appendix A.3, row #3)
5. Concerns regarding the approach to consultation for the DNNP, including about how they will be meaningfully consulted throughout the DNNP process when decisions that could impact their Rights are being made. Hiawatha First Nation's view is that meaningful consultation has not occurred as no mutual understanding on the potential impacts to Rights has been reached. (Appendix A.3, row #6)
6. Concerns about the regulatory review process and legislative framework used to assess the DNNP. Hiawatha First Nation's view is that the DNNP regulatory process should include the standards and principles under the IAA. (Appendix A.3, row #7)
7. Concerns about OPG's environmental monitoring program and recommendations to include cultural keystone species in all monitoring aspects of the DNNP. (Appendix A.3, row #8)
8. Concern about the potential for the DNNP to impact the environment. Hiawatha First Nation notes that any impacts to the environment regardless of their Western-perceived severity, represent potential and often real impacts to Inherent, Aboriginal and Treaty Rights. (Appendix A.3, row #8)

Hiawatha First Nation has made a number of requests for accommodation and mitigation, including for an Indigenous knowledge study, gap analysis, cumulative effects assessment, RIA and greater involvement in the environmental monitoring and follow up program.

4.3.3 CNSC staff's response

CNSC staff acknowledge the issues and concerns that Hiawatha First Nation has raised to date related to the DNNP. CNSC staff have worked to understand, assess and address the concerns to the greatest extent possible by having focused discussions, consultation providing detailed responses, reflecting Hiawatha First Nation's views in CNSC's documentation, communicating Hiawatha First Nation's concerns to OPG and discussing the DNNP at regularly meetings with Hiawatha first Nation to better understand their concerns and identify commitments, mitigation and a path forward to addressing the concerns. CNSC staff's view is that the approach to consultation conducted for the DNNP has been in line with best practices and is flexible based on the specific needs and requests of each potentially impacted Indigenous Nation and community. CNSC staff have provided opportunities for Hiawatha First Nation to provide input and feedback on how they would like to be consulted for the DNNP and what would be meaningful for them.

CNSC staff have made initial commitments (listed below) to address some of the concerns raised to date. CNSC staff are committed to working with Hiawatha First

Nation through the RIA process and further consultation on the DNNP Licence to Construct application to identify additional commitments, mitigations and a path forward to addressing the concerns related to the DNNP Licence to Construct application, as appropriate. CNSC staff are striving to achieve a consensus and resolution on issues related to the DNNP Licence to Construct application in advance of the Part-2 hearing. The outcomes of this and a final commitment list will be included in the CNSC's supplemental submission to the Commission.

Information regarding specific responses to each of Hiawatha First Nation's concerns are included in the issues tracking table found in Appendix A.3.

In summary, CNSC staff are committed to:

- Continuing to discuss the requests for mitigation and accommodation that Curve Lake First Nation has raised, including with OPG as appropriate.
- Collaborating with Hiawatha First Nation and interested WTFN on supporting an Indigenous Knowledge and Land Use study specific to the DNNP to help gather more specific Indigenous Knowledge information and data regarding WTFN Rights and interests that could be potentially impacted by the DNNP and other projects in the treaty territory. The results of these studies can then help to inform an adaptive management approach and OPG's EA follow-up monitoring program, such that the DNNP construction and related activities would be protective of their Rights and interests, should the DNNP proceed.
- CNSC staff are supportive of OPG and potentially impacted WTFN working collaboratively on the scoping and implementation of a cumulative effects study. CNSC staff are open to supporting this study to help inform OPG's EA follow-up monitoring program and future RIAs as appropriate.
- Ongoing engagement and consultation with Hiawatha First Nation for this Project including discussions through the ToR for long-term engagement between the CNSC and Hiawatha First Nation, as well as ongoing Hiawatha First Nation involvement in the CNSC's IEMP and collaboration on ongoing oversight of commitments and protection of the environment and their Rights and interests for the broader Darlington Site.

CNSC staff are aware that OPG has been engaging with Hiawatha First Nation to better understand their concerns and work on collaborative ways to address or mitigate the concerns. CNSC staff are aware that OPG is working with interested WTFN, including Hiawatha First Nation to support an Indigenous Knowledge study. CNSC staff understand that OPG is currently working with interested WTFN to scope the study and plan to begin implementation by the end of 2024. OPG has also begun discussing opportunities for greater involvement in environmental protection and environmental monitoring.

CNSC staff encourages OPG to continue discussions and collaboration with Hiawatha First Nation to address their concerns regarding cumulative and legacy effects, including

collaboration on the scoping of a potential cumulative effects study as it relates to the DNNP and other OPG nuclear operations in WTFN' territory. CNSC staff anticipate receiving an update from OPG on their engagement efforts, in an Indigenous Engagement Report to be filed on the record, as per the Commission's Record of Decision – Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment, issued 22 April 2024.

4.3.4 Conclusions

CNSC staff are committed to continuing to consult and work collaboratively with Hiawatha First Nation and OPG in advance of the DNNP Licence to Construct Part-2 hearing to address the concerns and requests related to the DNNP Licence to Construct application they have raised to date. This includes collaborative work on the RIA. CNSC staff are also committed to providing oversight of OPG efforts to follow through and implement commitments made to address Hiawatha First Nation's specific requests and concerns. Updated information about the potential impacts of the DNNP Licence to Construct application on Hiawatha First Nation's Indigenous and/ or Treaty Rights and mitigation and/ or accommodation measures to address any identified impacts will be included in the supplemental information, to be submitted to the Commission prior to the Licence to Construct Part-2 hearing.

4.4 Consultation activities with other WTFN

4.4.1 Alderville First Nation

Alderville First Nation was provided with all of the notices and opportunities discussed in Table 2.

Alderville First Nation is a Mississauga Nation and is located approximately 50 km south of Peterborough Ontario. Alderville First Nation has Indigenous and Treaty Rights under section 35 of the *Constitution Act, 1982* and is a signatory to the Gunshot Treaty (1877-88), Williams Treaties (1923) and the Williams Treaties Settlement Agreement (2018).

Table 6: Summary of the key consultation activities with Alderville First Nation

Date	Consultation Activity
October 2022	Alderville First Nation sent an email in response to the CNSC's notification of the DNNP Licence to Construct application indicating that they are not in favour of nuclear reactors and wanted to consider alternative energy sources. CNSC staff responded and provided information about the role of the CNSC and offered to meet to discuss their concerns and how they can get involved in the regulatory process and have their voices heard directly by the Commission.
November, 2022	Alderville First Nation sent an email raising concerns about how fuel bundles will be stored and kept in a safe place away from the

Date	Consultation Activity
	possibility of contamination. CNSC staff provided information regarding the requirement for OPG to submit a waste management plan and offered to meet with the Nation to discuss their concerns, the DNNP, and CNSCs regulatory process in more detail. CNSC staff did not receive a response.
October 2023	CNSC staff had an introductory meeting with Alderville First Nation's new Chief and consultation coordinator. CNSC staff provided an overview of the role of the CNSC and discussed Alderville First Nation's interest and priorities. CNSC staff offered to set up additional meetings to consult on specific projects, such as the DNNP. Alderville First Nation indicated that they would discuss this internally. No interest in meeting on the DNNP has been expressed to date.
November 2023	CNSC staff met with Alderville First Nation and discussed opportunities for funding under the Indigenous and Stakeholder Capacity Fund. No interest or comments related to the DNNP have been expressed to date.
January 2024	On January 5, 2024 CNSC staff sent an email reminder regarding the Commission's January 2024 hearing regarding the applicability of the EA to OPG's chosen technology. CNSC staff also provided a summary of the CMD and offered to meet to discuss the DNNP and next steps in the regulatory process.
March 2024	On March 6 2024, CNSC staff phoned Alderville First Nation, to discuss the DNNP, next steps in the regulatory and consultation process and learn about any interest or concerns related to the DNNP. CNSC staff left a voicemail and offered to set up a meeting to discuss further. No response was received.
April 2024	On April 19, 2024, CNSC staff sent a follow up email to Alderville First Nation, offering to meet and discuss any topics of interest, including the DNNP. No response was received.

4.4.2 The Chippewas of Georgina Island First Nation

The Chippewas of Georgina Island First Nation was provided with all of the notices and opportunities discussed in Table 2.

The Chippewas of Georgina Island First Nation are located on the southern shores of Lake Simcoe, approximately 80 km north of Oshawa, Ontario. The Chippewas of Georgina Island First Nation has Indigenous and Treaty Rights under section 35 of the *Constitution Act, 1982* and is a signatory to the Gunshot Treaty (1877-88), Williams Treaties (1923) and the Williams Treaties Settlement Agreement (2018). To date, the

Chippewas of Georgina Island First Nation have not raised any specific concerns or issues regarding the DNNP.

Table 7: Summary of the key consultation activities with Chippewas of Georgina Island First Nation

Date	Consultation Activity
June 2022	CNSC staff had a phone call with the Chippewas of Georgina Island First Nation regarding an opportunity to meet to discuss and consult on the DNNP. The Chippewas of Georgina Island First Nation confirmed their preference was to receive information about the DNNP application over email and then they would indicate if they were interested in further discussions. CNSC staff followed up with an email providing an overview of the project and regulatory process. No response was received.
December 2023	The Chippewas of Georgina Island First Nation submitted an application for funding to attend the DNNP Commission hearings regarding the applicability of the EA to OPG's chosen technology and review relevant documents. Although the deadline to apply for funding had closed, CNSC staff provided funding to support Chippewas of Georgina Island First Nation's participation in the regulatory process and to meet with the CNSC so that they can learn more about the CNSC's Commission hearing process and the DNNP project.
January 2024	On January 5, 2024 CNSC staff sent an email reminder regarding the Commission's January 2024 hearing regarding the applicability of the EA to OPG's chosen technology. CNSC staff also provided a summary of the CMD and offered to meet to discuss the DNNP and next steps in the regulatory process. On January 11, 2024, the Chippewas of Georgina Island First Nation and CNSC staff had an introductory meeting to discuss the CNSC's role, consultation on the DNNP and the DNNP regulatory process and Chippewas of Georgina Island First Nation's interest in participating. Chippewas of Georgina Island First Nation requested that quarterly meetings be held and requested the CNSC continue to share information. No DNNP specific concerns were raised during the meeting or to date.
February 2024	On February 2, 2024, CNSC staff followed up with the Chippewas of Georgina Island First Nation to confirm whether they had any questions or concerns following the DNNP Commission hearing and offered to set up a meeting to discuss and consult further. Additional follow up was conducted on March 6 by phone and email. No response has been received to date.

Date	Consultation Activity
	On February 19, 2024, The Chippewas of Georgina Island First Nation received PFP to support reviewing the application from OPG for a licence to construct for the DNNP This funding was also to assist in the review of related documentation and to support participation in a potential hearing for the Commission to consider the application.
March 2024	On March 6, 2024, CNSC staff called and sent a follow up email to the Chippewas of Georgina Island First Nation and offered to set up a meeting to discuss the DNNP regulatory process, any questions or concerns and proposed next steps for consultation. No response was received.

4.4.3 The Chippewas of Rama First Nation

The Chippewas of Rama First Nation was provided with all the notices and opportunities discussed in Table 2.

The Chippewas of Rama First Nation are located on the northern shores of Lake Simcoe, approximately 10 km north of Orillia, Ontario. The Chippewas of Rama First Nation has Indigenous and Treaty Rights under section 35 of the *Constitution Act, 1982* and is a signatory to the Gunshot Treaty (1877-88), Williams Treaties (1923) and the Williams Treaties Settlement Agreement (2018). To date, the Chippewas of Rama First Nation have not raised any specific concerns or issues regarding the DNNP.

Table 8: Summary of the key consultation activities with Chippewas of Rama First Nation

Date	Consultation Activity
June 2022	CNSC staff spoke to the Chippewas of Rama First Nation regarding an opportunity to meet to discuss the DNNP regulatory process and how the Chippewas of Rama First Nation would like to be consulted. The Chippewas of Rama First Nation requested that they may be interested in meeting and requested that the CNSC follow up with an email. CNSC staff sent an email with potential dates for a meeting. CNSC staff followed up again but did not receive a response.
November 2022	CNSC staff spoke to the Chippewas of Rama First Nation to confirm receipt of the notice of a licence to construct for the DNNP and offer to meet to discuss further. The Chippewas of Rama First Nation confirmed that they would contact the CNSC if they were interested in participating in the regulatory review process for the DNNP.
October 2023	CNSC staff spoke to the Chippewas of Rama First Nation and offered to meet to provide additional information on the CNSC's role, the DNNP regulatory process and opportunities for consultation

Date	Consultation Activity
	and engagement. The Chippewas of Rama First Nation indicated that they may be interested in meeting but would speak with the WTFN coordinator first and then confirm. CNSC staff sent a follow up email but no response was received to date.
January 2024	On January 5, 2024 CNSC staff sent an email reminder regarding the Commission's January 2024 hearing regarding the applicability of the EA to OPG's chosen technology. CNSC staff also provided a summary of the CMD and offered to meet to discuss the DNNP and next steps in the regulatory process. No response was received.
March 2024	On March 6, 2024, CNSC staff called and sent a follow up email to the Chippewas of Rama First Nation and offered to set up a meeting to discuss the DNNP regulatory process, any questions or concerns and proposed next steps for consultation. No response was received.

4.4.4 Beausoleil First Nation

Beausoleil First Nation was provided with all the notices and opportunities discussed in Table 2.

Beausoleil First Nation is a Chippewa Nation, located on the southern edge of Georgian Bay, Ontario. Beausoleil First Nation has Indigenous and Treaty Rights under section 35 of the *Constitution Act, 1982* and is a signatory to the Gunshot Treaty (1877-88), Williams Treaties (1923) and the Williams Treaties Settlement Agreement (2018). To date, Beausoleil First Nation have not raised any specific concerns or issues regarding the DNNP.

Table 9: Summary of the key consultation activities with Chippewas of Beausoleil First Nation

Date	Consultation Activity
June 2022	CNSC staff spoke to Beausoleil First Nation regarding an opportunity to meet to discuss the DNNP regulatory process and how Beausoleil First Nation would like to be consulted. Beausoleil First Nation requested that the CNSC provide potential dates for a meeting in an email. CNSC staff provided potential dates for a meeting and followed up again in July 2022 however no response was received.
October 2023	CNSC staff called Beausoleil First Nation to confirm whether they are interested in discussing the DNNP, role of the CNSC and opportunities for consultation and engagement. In November 2023, a follow up email was sent. No response was received.

Date	Consultation Activity
March and April 2024	CNSC staff spoke to Beausoleil First Nation on March 6, 2024 regarding an opportunity to meet to discuss the DNNP regulatory process. During the call, Beausoleil First Nation expressed interest in meeting to discuss the facilities and processes in their territory including the DNNP, the CNSC's IEMP and funding programs further. CNSC staff followed up with an email on March 7, 2024 to provide potential dates for a meeting. CNSC staff followed up on this email on April 18 and Beausoleil First Nation confirmed an interest in meeting in early May.
May 2024	On May 2, 2024, CNSC staff met with Beausoleil First Nation to discuss the CNSC's role, the facilities in their territory, funding and opportunities to build a relationship and consult on the DNNP. During the meeting, Beausoleil First Nation confirmed that they did not have specific projects or facilities that they wanted to discuss further. No DNNP specific concerns were raised during the meeting or to date.

4.4.5 Conclusion

To date, Alderville First Nation, Beausoleil First Nation, Chippewas of Georgina Island First Nation and Chippewas of Rama First Nation have not raised any concerns specific to the DNNP Licence to Construct application or any concerns around the potential impacts from the DNNP Licence to Construct application on their Indigenous and/or Treaty Rights.

CNSC staff note that these First Nations have not expressed interest directly to CNSC staff requesting more in-depth consultation and engagement regarding the DNNP Licence to Construct application. CNSC staff remain committed to continuing to provide opportunities for consultation related to the DNNP and project updates and relevant information, should it proceed.

4.5 Engagement activities with Saugeen Ojibway Nation

Saugeen Ojibway Nation has reviewed and provided feedback on Section 4.5 of the Consultation Report. CNSC staff note that the issues and concerns listed in Section 4.5.2 are the views of Saugeen Ojibway Nation.

4.5.1 Background on Saugeen Ojibway Nation and Relationship with the CNSC

Saugeen Ojibway Nation was included on all the key correspondence and opportunities for engagement and participation in the regulatory processes listed in Table 2 above.

The Saugeen Ojibway Nation is comprised of the Chippewas of Nawash Unceded First Nation and Saugeen First Nation. The Saugeen Ojibway Nation define their Treaty territory as extending east from Lake Huron to the Nottawasaga River and south from the northern tip of the Saugeen Peninsula (also known as the Bruce Peninsula) to the Maitland River system, eleven miles south of Goderich. This territory also includes the water around the Bruce Peninsula. The Saugeen Ojibway Nation's Indigenous and Treaty Rights include the right to fish for sustenance and commercially, which are protected under section 35 of the *Constitution Act, 1982*. The Saugeen Ojibway Nation is actively engaged on nuclear files in their territory (including the Bruce Nuclear Generating Stations, OPG's Western Waste Management Facility, and Canadian Nuclear Laboratories' Douglas Point) and have expressed interest and concern regarding the DNNP, related to the potential for waste being stored at the Western Waste Management Facility and the implications for the Nuclear Waste Management Organization's proposed Deep Geologic Repository for used nuclear fuel, should the project be proposed in their territory.

CNSC staff and Saugeen Ojibway Nation signed a ToR for long-term engagement in May 2019. Since receiving OPG's Licence to Construct application in November 2022, topics related to the DNNP have been discussed as appropriate during regularly scheduled meetings under the ToR. Additionally, CNSC staff offered to have DNNP specific meeting and/ or engagement activities in additional to the regularly scheduled meetings with the Saugeen Ojibway Nation and their representatives.

Table 10: Summary of the key engagement activities the Saugeen Ojibway Nation

Date	Engagement Activity
January 2023	Saugeen Ojibway Nation requested information be sent regarding timelines and upcoming activities for the DNNP. CNSC staff provided this information via email and highlighted that CNSC staff were interested in engaging with Saugeen Ojibway Nation directly on this project and working to understand their concerns with regards to the DNNP. On January 10, 2023, Saugeen Ojibway Nation was awarded PFP to support the review of OPG's environmental impact statement and plant parameter envelope for the DNNP as well as participate in meetings and workshops with the CNSC.
March 2023	On March 24, 2023, CNSC staff and Saugeen Ojibway Nation had a meeting and discussed the regulatory review process for the DNNP and discussed questions and concerns they raised in relation to waste management.
April 2023	On April 3, 2023, Saugeen Ojibway Nation submitted comments on OPG's EIS review and PPE documents. CNSC staff offered to

Date	Engagement Activity
	discuss the concerns at a DNNP specific meeting or a regularly scheduled ToR meeting.
May 2023	On May 16, 2023, CNSC staff provided an update on the DNNP and offered to have a DNNP specific meeting.
July 2023	On July 18, 2023, Saugeen Ojibway Nation requested information about what was included in the DNNP CMD related to engagement with Saugeen Ojibway Nation. CNSC staff provided an overview of the contents of the CMD specific to engagement with the Saugeen Ojibway Nation. CNSC staff provided information regarding the CMD and regulatory process for the DNNP Licence to Construct, indicating that there would be opportunities for engagement and for Saugeen Ojibway Nation to provide their input into the Licence to Construct CMD if they were interested.
August 2023	On August 8, 2023, Saugeen Ojibway Nation was awarded PFP to support reviewing the documentation on the applicability of the DNNP environmental assessment and plant parameter envelope to OPG's selected BWRX-300 small modular reactor technology, and in participating in the hearing process by providing topic-specific interventions to the Commission.
November 2023	On November 20, 2023, Saugeen Ojibway Nation submitted an intervention for the DNNP Commission hearing on the applicability of the EA. On November 28, 2023, CNSC staff provided a written response to Saugeen Ojibway Nation's comments and concerns regarding OPG's EIS review and PPE documents for the DNNP. On November 29, 2023, CNSC responded to questions raised by the Saugeen Ojibway Nation regarding potentially contaminated soils from License to Prepare Site activities during a regularly scheduled meeting and followed-up with additional details via email.
January 2024	On January 3, 2024, CNSC staff provided Saugeen Ojibway Nation with the agenda for the DNNP Commission hearing for the applicability of the EA to OPG's chosen technology and offered to set up a DNNP specific meeting to discuss their comments and concerns. On January 15, 2024, CNSC staff provided Saugeen Ojibway Nation with a news release related to the DNNP. CNSC reiterated the offer to meet to discuss their comments, concerns and the CNSC staff's written responses. Saugeen Ojibway Nation did not request a DNNP specific meeting at that time.

Date	Engagement Activity
	On January 18, 2024, CNSC staff provided information to Saugeen Ojibway Nation about the waste management requirements for the DNNP at different potential licensing stages and confirmed the status of the approach to RIAs for the DNNP Licence to Construct. CNSC staff offered to meet to discuss the RIA framework and/ or Saugeen Ojibway Nation's comments and concerns further. On January 24, 2024, Saugeen Ojibway Nation participated in both writing and orally in the DNNP Commission hearing on the applicability of the EA.
February 2024	On February 2, 2024, CNSC staff shared the update on Consultation and Engagement with Indigenous Nations and communities for the DNNP report that the Commission had requested during the January 23-25th, 2024 Commission hearings. CNSC staff noted that they would be looking to work collaboratively and engage with the Saugeen Ojibway Nation in the coming months to update and refine the information for the DNNP Licence to Construct application, should the project proceed. On February 29, 2024, CNSC staff sought feedback from the Saugeen Ojibway Nation on a summary table of the issues and concerns that Saugeen Ojibway Nation raised regarding the Project to date, including the CNSC staff's and OPG's responses to the concerns. On February 19, 2024, Saugeen Ojibway Nation was awarded PFP to support reviewing the application from OPG for a licence to construct for the DNNP. This funding was also to assist in the review of related documentation and to support participation in a potential hearing for the Commission to consider the application.
March and April 2024	On March 12, 2024, Saugeen Ojibway Nation confirmed via email that they decided not to provide feedback on the issues and concerns tracking table at this time, but would continue to discuss any questions or concern during the monthly CNSC/SON meetings. In the March 2024 monthly meeting, Saugeen Ojibway Nation raised questions and concerns with how the CSNC was implementing UNDRIP for DNNP and other major projects in their territory. CNSC staff and Saugeen Ojibway Nation agreed to set up a meeting to discuss this further. In the March 2024 monthly meeting, Saugeen Ojibway Nation raised concerns that JRP recommendations #52 and #53 are not being honored. Saugeen Ojibway Nation reiterated these concerns in an email on April 3, 2024. On April 4, CNSC staff provided a response to the concern and recommended meeting to discuss the topic further.

Date	Engagement Activity
	On March 28 2024, CNSC staff shared draft sections (Sections4, 4.5, 6, 7) of the DNNP Consultation Report for Saugeen Ojibway Nation's review. CNSC staff provided information about the approach to reporting to the Commission. On April 3, Saugeen Ojibway Nation responded and flagged a concern with the conclusion in section 4.5.4 of the report. Saugeen Ojibway Nation indicated that they do not feel their concerns have been adequately addressed and reiterated concerns their concerns with JRP recommendations #52 and #53 and the CNSC's regulatory process for assessing waste management. CNSC staff provided a written response on April 4, 2024 and discussed further at a meeting on May 3, 2024.
May 2024	On May 3, 2024, Saugeen Ojibway Nation and CNSC staff had a meeting to engage with and discuss Saugeen Ojibway Nation's concerns regarding the implementation on UNDRIP and DNNP waste management. On May 23, 2024, CNSC staff shared updated version of the Consultation Report (Sections4, 4.5, 6, 7) and the issues tracking table for Saugeen Ojibway Nation's awareness and review. Saugeen Ojibway Nation provided feedback and edits on June 7, 2024.

4.5.2 Key Issues and Concerns raised by Saugeen Ojibway Nation

Key issues and concerns raised by Saugeen Ojibway Nation specific to the DNNP are summarized below. The detailed issues tracking table for Saugeen Ojibway Nation is found in Appendix A.4. The specific row where the issue is discussed in Appendix A.4 is listed beside each bullet. Refer to this row in Appendix A.4 for additional context regarding the issue, CNSC staff's response, OPG's responses and current status of the issue.

1. Concerns regarding the implications of the DNNP being the first grid-scale SMR in Canada and the need for a strategic assessment. (Appendix A.4 row #1)
2. Concerns about wastes from the DNNP being transported and stored at the western waste management facility, in Saugeen Ojibway Nation's traditional and treaty territories. Concern that the CNSC is not honouring JRP recommendations #52 and #53. (Appendix A.4 row #2)
3. Concerns about the characterization of the Saugeen Ojibway Nation as an "interested" Indigenous Nation and community rather than one with Rights that may be impacted by the DNNP and the consultation process for the DNNP. (Appendix A.4 row #2)
4. Concern regarding the CNSC's approach to implementation of the UN Declaration. Saugeen Ojibway Nation has expressed that they must provide their consent prior to OPG potentially transporting and storing any waste from the DNNP in their territory. (Appendix A.4 row #6)
5. Concerns about the fuel sources required for the DNNP. (Appendix A.4 row #5)

6. Concerns about the siting of the DNNP next to the existing CANDU reactors. (Appendix A.4 row #4)

4.5.3 CNSC staff's response

CNSC staff acknowledge the issues and concerns that Saugeen Ojibway Nation has raised to date related to the DNNP. CNSC staff also acknowledge that Saugeen Ojibway Nation have concerns related to SMRs and new nuclear projects more generally, long-term storage of radioactive wastes in their Territory, and the ongoing the development of the nuclear industry in Saugeen Ojibway Nation Territory. CNSC staff have worked to address the concerns raised to date to the greatest extent possible by having discussions, reflecting the Saugeen Ojibway Nation's views in CNSC's documentation, communicating the Saugeen Ojibway Nation's concerns to OPG and discussing the DNNP at regularly meetings with Saugeen Ojibway Nation to better understand their concerns and identify commitments, mitigations and a path forward to addressing the concerns. Information regarding specific responses to each of Saugeen Ojibway Nation's concerns are included in the issues tracking table in Appendix A.4.

CNSC staff note that that OPG has not yet made a decision about where waste generated by the DNNP will be stored, should it proceed, and that is not within the scope of the decision to be made by the Commission regarding at the Licence to Construct application. As a lifecycle regulator, CNSC's regulatory requirements, including for waste management plans, increase in scope as the applicant progresses through each licensing phase. CNSC will continue to evaluate and assess OPG's programs against regulatory requirements should the DNNP progress through each licensing phase, including OPG's nuclear waste management program. CNSC staff remain committed to continuing to discuss these issues regarding waste management with Saugeen Ojibway Nation at each licensing stage, should the DNNP proceed.

Saugeen Ojibway Nation's View

Saugeen Ojibway Nation's view is that the plan for the storage of radioactive waste is a fundamental consideration and is not a matter to be considered at a later date or stage of the project. Further Saugeen Ojibway Nation's understanding of the JRP's recommendations and Canada's response regarding waste management is that OPG is required to keep DNNP waste on site throughout the duration of the project. This accommodation was made as the result of Saugeen Ojibway Nation's interventions before the JRP during the environmental assessment process. Saugeen Ojibway Nation also expects to see within the construction plans for the DNNP adequate facilities to accommodate LLW, ILW, and HLW. As such, the waste issue is a key aspect of the Licence to Construct application.

CNSC staff remain committed to continuing to discussing Saugeen Ojibway Nation's concerns about the DNNP process to date and continue to seek input from the Saugeen Ojibway Nation on how they would like to be consulted and engaged on the DNNP

moving forward, should it proceed, to ensure that the ongoing engagement is flexible and responsive.

CNSC staff encourage OPG to continue working with Saugeen Ojibway Nation to respond to and address their concerns to the extent possible, including as additional information about the DNNP waste management plans are available. CNSC staff anticipate receiving an update from OPG on their engagement efforts, in an Indigenous Engagement Report to be filed on the record, as per the Commission's Record of Decision – Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment, issued 22 April 2024.

4.5.4 Conclusions

CNSC staff are of the view that Saugeen Ojibway Nation have been provided with many opportunities to be engaged regarding the DNNP and that the DNNP specific questions and concerns raised by Saugeen Ojibway Nation have been adequately addressed, responded to and discussed to the extent possible within the CNSC's mandate and regulatory requirements at the Licence to Construct stage of the DNNP.

CNSC staff remain committed to engaging and with Saugeen Ojibway Nation regarding the DNNP, should it proceed. This including working with Saugeen Ojibway Nation and OPG to address their concerns regarding waste management in the Licence to Operate phase of the DNNP, as OPG is required to submit additional information, should the project proceed. CNSC staff also acknowledge that Saugeen Ojibway Nation have more general concerns regarding the nuclear industry and CNSC staff remain committed to discussing and working to address these concerns as part of the regularly scheduled meetings under the ToR for long-term engagement.

Saugeen Ojibway Nation's View

Saugeen Ojibway Nation disagrees with the CNSC. Saugeen Ojibway Nation understands the Commission to have recognized the commitment to keep the waste at the Darlington site in its Record of Decision regarding the applicability of the environmental assessment to the chosen technology. As long as this commitment is upheld throughout the licensing process and the life of the project—should it proceed—the central accommodation Saugeen Ojibway Nation sought to have recognized before the JRP will have been met.

4.6 Engagement activities with Six Nations of the Grand River

Multiple versions of this section of the Consultation Report were shared with Six Nations of Grand River for their review, however no feedback was received at the time of finalizing the Consultation Report. CNSC staff note that the issues and concerns listed in Section 4.6.2 are the views that Six Nations of the Grand River has previously expressed, through oral communication with the CNSC.

4.6.1 Background on Six Nations of the Grand River and Relationship with the CNSC

Six Nations of the Grand River represents six Haudenosaunee Nations and is located approximately 20 km south of Brantford, Ontario. CNSC staff have been engaging with Six Nations of the Grand River through frequent meetings on topics and facilities of interest. Six Nations of the Grand River have expressed interest in the Darlington and Pickering sites and related nuclear projects, including the DNNP.

Six Nations of the Grand River was included on all of the key correspondence and opportunities for engagement and participation in the regulatory processes listed in Table 2 above.

Table 11: Summary of the key engagement activities with Six Nations of the Grand River

Date	Engagement Activity
January 2023	On January 10, 2023 Six Nations of the Grand River was awarded PFP to support the review of OPG's environmental impact statement and plant for the DNNP as well as participate in meetings and workshops with the CNSC.
March 2023	On March 1, 2023, CNSC staff met with Six Nations of the Grand River to provide information about the history of the DNNP EA and OPG's EIS/ PPE documents. The DNNP licensing review process was also discussed.
April 2023	On April 4, 2023, Six Nations of the Grand River attended the DNNP public workshop. On April 4, 2023, CNSC staff followed up with Six Nations of the Grand River following the workshop and offered to meet directly to continue discussing concerns, questions or comments regarding the DNNP and next steps in the regulatory process. Six Nations of the Grand River confirmed they did not have any additional questions at that time.

Date	Engagement Activity
February 2024	On February 29, 2024, CNSC staff sought feedback from Six Nations of the Grand River on a summary table of the issues and concerns that they have raised regarding the Project to date, including the CNSC staff's and OPG's responses to the concerns. CNSC staff also offered to set up a meeting to provide an update on the DNNP, including on the technical review of the Licence to Construct application.
March 2024	On March 28, 2024, CNSC staff followed up with Six Nations of the Grand River, to confirm whether they had any comments on the issues tracking table. CNSC staff provided draft sections (Sections 4, 4.6,6, 7) of the Consultation Report for their review. CNSC staff also offered to meet to discuss any of the documents shared or provide an update on the DNNP. CNSC staff have not received a response to date.

4.6.2 Key Issues and Concerns raised by Six Nations of the Grand River and CNSC Staff's Response

In the March 2023 meeting with CNSC staff and DNNP public workshop, Six Nations of the Grand River raised comments about the need to include culturally important species in monitoring programs and ensure these species are protected (Appendix A.5 row #1). CNSC staff provided information about the CNSC's expectations and guidance for licensees and project proponents in relation to the consideration and inclusion of Indigenous Knowledge in their assessments and projects as outlined in REGDOC-3.2.2: *Indigenous Engagement*. CNSC staff are also aware that OPG has incorporated Indigenous Knowledge and cultural keystone species into their environmental monitoring program. Additional information about issues and concerns raised to date by Six Nations of the Grand River, CNSC Staff's responses, CNSC Staff's views on OPG's responses and the current status of the issues is included in the issues tracking table in Appendix A.5.

Since April 2023, CNSC staff have continued to keep Six Nations of the Grand River informed of the DNNP and provided ongoing opportunities to meet and continue to discuss any comments or concerns. However, Six Nations of the Grand River has not responded to these opportunities and offers to date.

4.6.3 Conclusions

CNSC staff are of the view that the questions and concerns raised by Six Nations of the Grand River have been adequately addressed, responded to and discussed to date. CNSC staff remain committed to engaging and sharing information with Six Nations of the Grand River regarding the DNNP moving forward.

4.7 Engagement activities with Métis Nation of Ontario

This section of the Consultation Report was shared with the Métis Nation of Ontario, who provided input and feedback. CNSC staff note that the issues and concerns included in Section 4.7.2 are the views of the Métis Nation of Ontario.

4.7.1 Background on Métis Nation of Ontario and Relationship with the CNSC

The Métis Nation of Ontario was included on all of the key correspondence and opportunities for engagement and participation in the regulatory processes listed in Table 2 above. The DNNP site is located in Métis Nation of Ontario's administrative Region 8—this is outside of the recognized traditional territories associated with the historic Métis communities represented by the Métis Nation of Ontario. For clarification, the Métis Nation of Ontario is not asserting lands and resources (section 35) Rights in the project area, however, the MNO Region 8 Consultation Committee, being the elected leaders of the Métis Nation of Ontario citizens living in the vicinity of the project, have expressed interest in engaging on the project as Ontario citizens.

CNSC staff and the Métis Nation of Ontario signed a ToR for long-term engagement in December 2019. Since receiving OPG's Licence to Construct application for the DNNP in November 2022, regularly scheduled meetings under the ToR have often been used to discuss the DNNP. Additionally, CNSC staff frequently offered to have DNNP specific meeting and/or consultation activities in additional to the regularly scheduled meetings.

Table 12: Summary of the key engagement activities with the Métis Nation of Ontario

Date	Engagement Activity
August 2022	On August 11, 2022, CNSC staff met with the Métis Nation of Ontario Region 8 Consultation Committee to provide an update on the DNNP regulatory process.
January 2023	On January 10, 2023 the Métis Nation of Ontario was awarded PFP to support the review of OPG's environmental impact statement and plant parameter envelope for the DNNP as well as participate in meetings and workshops with the CNSC.
March 2023	On March 6, 2023, CNSC staff met with the Métis Nation of Ontario Region 8 Consultation Committee to provide information on the history of the EA, a DNNP licensing review update, and an overview of OPG's EIS and PPE review findings.
July 2023	On July 10, 2023, the Métis Nation of Ontario was awarded PFP to support reviewing the documentation on the applicability of the DNNP environmental assessment and plant parameter envelope to

Date	Engagement Activity
	OPG's selected BWRX-300 small modular reactor technology, and in participating in the hearing process by providing topic-specific interventions to the Commission.
November 2023	On November 20, 2023, the Métis Nation of Ontario submitted an intervention for the DNNP Commission hearing on the applicability of the EA.
February 2024	On February 2, CNSC staff shared the update on Consultation and Engagement with Indigenous Nations and communities for the DNNP report that the Commission had requested during the January 23-25th, 2024, Commission hearings. CNSC staff noted that they would be looking to work collaboratively with the Métis Nation of Ontario in the coming months to update and refine the information for the DNNP Licence to Construct application, should the project proceed. On February 29, CNSC staff sought feedback from the Métis Nation of Ontario on a summary table of the issues and concerns they have raised regarding the Project to date, including the CNSC staff's and OPG's responses to the concerns. On February 19, 2024, the Métis Nation of Ontario was awarded funding to support reviewing the application from OPG for a licence to construct for the DNNP. This funding was also to assist in the review of related documentation and to support participation in a potential hearing for the Commission to consider the application.
March 2024	On March 22, 2024, the Métis Nation of Ontario confirmed that the Region 8 Consultation Committee reviewed the DNNP Issues tracking table and no additional comments or concerns were raised. The Métis Nation of Ontario indicated that a DNNP update meeting with the CNSC could be discussed in early May 2024, once MNO elections were finalized. On March 28, 2024, CNSC staff provided draft sections of the Consultation Report (Sections 4, 4.7,6, 7) for their review. CNSC staff also offered to meet to discuss any of the documents shared or provide an update on the DNNP.
April 2024	The Métis Nation of Ontario provided feedback on Section 4.7 of this Consultation Report. CNSC staff incorporated the edits from Métis Nation of Ontario into this report.

4.7.2 Key Issues and Concerns raised by Métis Nation of Ontario and CNSC Staff's response

The Métis Nation of Ontario has raised concerns regarding the nuclear security requirements and programs for the DNNP, potential impacts from the project on the

environment and requests for continued engagement by OPG and the CNSC on the DNNP. Additional information about issues and concerns raised by the Métis Nation of Ontario to date, CNSC Staff's responses, CNSC Staff's views on OPG's responses and the current status of the issues can be found in the issues tracking table in Appendix A.6.

CNSC staff have worked to address the concerns to the greatest extent possible by having discussions with the Métis Nation of Ontario about their questions and concerns raised. Additionally, CNSC staff are aware that OPG has been engaging the Métis Nation of Ontario and are included in OPG's Indigenous Engagement Report, as an Indigenous Nation or community interested in the DNNP.

4.7.3 Conclusions

CNSC staff are of the view that the questions and concerns raised by the Métis Nation of Ontario have been adequately addressed, responded to and discussed to date. CNSC staff remain committed to ongoing engagement with the Métis Nation of Ontario as per the CNSC/MNO ToR for Long-term engagement and encourages OPG to continue to engage with the Métis Nation of Ontario regarding the DNNP moving forward.

4.8 Engagement activities with the Mohawks of the Bay of Quinte

The Mohawks of the Bay of Quinte were included on all of the key correspondence and opportunities for engagement and participation in the regulatory processes listed in Table 2 above. The Mohawks of the Bay of Quinte are located approximately 20 km east of Belleville, Ontario. The Mohawks of the Bay of Quinte have expressed interest in nuclear projects that may impact Lake Ontario, including the DNNP.

Table 13 Summary of the key engagement activities with the Mohawks of the Bay of Quinte

Date	Engagement Activity
October 2023	On October 26 2023, CNSC staff spoke to the Mohawks of the Bay of Quinte and provided information about the DNNP process, the role of the CNSC and opportunities to participate. The Mohawks of the Bay of Quinte requested that information continue to be provided via email and that they would indicate if they were interested in meeting to discuss further with the CNSC
January 2024	On January 5, 2024 CNSC staff sent an email reminder regarding the Commission's January 2024 hearing regarding the applicability of the EA to OPG's chosen technology. CNSC staff also provided a summary of the CMD and offered to meet to discuss the DNNP and next steps in the regulatory process. No response was received.
March 2024	On March 6, 2024 CNSC staff called the Mohawks of the Bay of Quinte and offered to set up a meeting to discuss the DNNP

Date	Engagement Activity
	regulatory process, any questions or concerns and proposed next steps for consultation. No response was received.

To date, the Mohawks of the Bay of Quinte have not expressed interest or raised any issues or concerns related to the DNNP to the CNSC. CNSC staff remain committed to continuing to provide opportunities to the Mohawks of the Bay of Quinte to be engaged and participate in the regulatory review process for the DNNP.

5. ENGAGEMENT LED BY OPG

REGDOC-3.2.2: *Indigenous Engagement* sets out requirements and guidance for licensees whose projects may raise the Crown's duty to consult. While the Crown cannot delegate the Duty to Consult and is ultimately responsible for ensuring the discharge of the Duty to Consult, and where appropriate, accommodate, is fulfilled, the Commission will consider the engagement undertaken by OPG when determining whether consultation has been adequate. The information collected by OPG, including measures proposed by OPG to avoid, mitigate, or offset potential adverse impacts from the DNNP are used to support the CNSC in meeting its consultation obligations.

CNSC staff have determined that REGDOC-3.2.2 applies to the DNNP Licence to Construct application. OPG has submitted multiple updates to their DNNP *Indigenous Engagement Report*, covering from April 2020 to November 2023 [16] [17]. CNSC staff have reviewed each version of the report and will continue to monitor and assess OPG's engagement related to the DNNP. CNSC staff note that the Commission's *Record of Decision – Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment* [4] indicates that the Commission expects OPG to produce an up-to-date engagement report, to be filed on the record of the public hearing regarding the Licence to Construct application, including status updates regarding progress in relation to the study and Assessments.

CNSC staff note that OPG has been engaging the identified Indigenous Nations and communities by holding meetings, hosting open houses, conducting workshops, site visits and ceremonies, sharing newsletters, and discussing issues and concerns and potential options to mitigate and address the concerns raised to date. OPG has offered capacity funding agreements to assist Indigenous Nations and communities in their engagement with OPG, where appropriate. CNSC staff recognise that OPG has long-standing relationships and engagement protocols with many of the identified Indigenous Nations and communities.

OPG provides regular updates to CNSC staff regarding its engagement activities and has sought to include the CNSC in its engagement activities, where appropriate and agreed by each Indigenous Nation or Community. CNSC staff acknowledge that Indigenous Nations and communities have raised concerns through OPG's engagement process about the DNNP, including the potential for impacts on hunting, fishing, and harvesting Rights in the areas surrounding the site, as well as the need to involve Indigenous Nations and communities in environmental monitoring programs and reflect their knowledge and perspectives. CNSC staff are also aware that MSIFN leadership has repeatedly called for OPG to secure consent before advancing the project, including the storage and transportation of nuclear fuel and waste.

OPG is in discussions with representatives of the WTFN to develop a pathway forward that includes a scoping exercise in early 2024 to begin to develop a framework to undertake an Indigenous Knowledge Study, which could include or lead to a cumulative effects study, a RIA and opportunities to identify and address the options for greater

involvement and engagement in OPG's environmental monitoring and follow-up programs, which would be informed by current approaches and best practices. MSIFN has noted that the WTFNs have only recently begun scoping the Indigenous Knowledge Study, which OPG is supporting, and the inclusion of a cumulative effects study, RIA, and other opportunities are yet to be determined.

OPG continues to work to support and maintain relationships with Indigenous Nations and communities and is working to address items of concern and requests related to the DNNP. CNSC staff encourages OPG to continue to discuss issues and concerns raised by Indigenous Nations and communities, including the proposed mitigation measures and commitments, to address any potential impacts to Indigenous and/or Treaty Rights, as appropriate. CNSC staff's conclusions and assessment on OPG's engagement related to the DNNP Licence to Construct application will be included in the supplemental submission prior to the DNNP Licence to Construct Part 2 hearing.

6. APPROACH AND UPDATE ON ASSESSMENT OF IMPACTS TO INDIGENOUS AND/ OR TREATY RIGHTS

In support of the CNSC's consultation obligations and process for OPG's Licence to Construct application for the DNNP, CNSC staff are offering and aiming to complete RIAs in collaboration with Curve Lake First Nation, Hiawatha First Nation and the Mississaugas of Scugog Island First Nation with support from OPG as appropriate. For the other WTFN, CNSC staff did not obtain information through OPG's engagement or CNSC staff's consultation that identified any potential impacts to their Indigenous and/or Treaty Rights as a result of the Project, to date.

The purpose of an RIA is to assess the potential pathways and severity of impacts of a proposed Project on the exercise of Indigenous and/or Treaty Rights of an Indigenous Nation or community, based on existing information, data and analysis, including Indigenous Knowledge, perspectives and views when provided and shared by the Indigenous Nation or community. The RIA also helps to summarize any potential mitigation and/or accommodation measures committed to by the proponent, the CNSC or other parties as appropriate, that could help to avoid, mitigate, reduce, or accommodate for any identified impacts and communicate the process, outcomes and recommendations in a collaborative way to the Commission in support of its decision-making process.

As described in Section 4, CNSC staff have had discussions and consulted with Curve Lake First Nation, Hiawatha First Nation and the Mississaugas of Scugog Island First Nation regarding the proposed approach to assessing potential impacts on their Indigenous and/or Treaty Rights in relation to the DNNP Licence to Construct application.

Concerns regarding the CNSC's RIA framework, process and timelines were raised in discussions and consultations with each of the potentially impacted Nation, including the timing for finalizing the RIA, existing gaps in the information required to conduct a fulsome RIA, concerns with regards to how cumulative effects are considered and assessed and the baseline being considered for the assessment. Additional details about the concerns raised by each Nation and CNSC's responses are included in the issues tracking tables in Appendix A and the Mississaugas of Scugog Island First Nation letter dated January 11, 2024 (CNSC responses letter dated January 24, 2024) in Appendix B.

Through discussions and consultation with Curve Lake First Nation, Hiawatha First Nation and the Mississaugas of Scugog Island First Nation, it was determined that CNSC staff would draft the RIAs specific to the DNNP Licence to Construct application and provide drafts to each Nation for their review, input and to support ongoing consultation regarding potential impacts and measures and commitments to address them to the greatest extent possible. On April 9, 2024, CNSC staff shared an initial draft of the RIAs with Curve Lake First Nation, Hiawatha First Nation and the Mississaugas of Scugog Island First Nation for their review and input.

In order to provide additional time for CNSC staff and Curve Lake First Nation, Hiawatha First Nation and the Mississaugas of Scugog Island First Nation to review and/ or collaborate on the drafting and finalization of the RIAs, the reports and related conclusions and recommendations will included as part of CNSC staff's supplemental submission which will be submitted to the Commission in advance of the DNNP Licence to Construct Part-2 hearing.

7. CONCLUSION AND NEXT STEPS

CNSC staff have aimed to conduct a thorough, transparent, flexible and collaborative consultation and regulatory process for OPG's DNNP Licence to Construct application. All identified Indigenous Nations and communities were provided with multiple opportunities to participate in the regulatory review and consultation and engagement process and funding was offered to support participation. Indigenous Nations and communities who have raised issues and concerns related to the DNNP were offered opportunities to collaboratively develop sections of the Consultation Report and issues tracking tables.

CNSC staff will continue to monitor and assess OPG's engagement activities throughout the regulatory review process as per REGDOC-3.2.2. CNSC staff's conclusions and assessment on OPG's engagement related to the DNNP Licence to Construct application will be included in the supplemental submission prior to the DNNP Licence to Construct Part-2 hearing.

Additionally, CNSC staff continue to offer and aim to work collaboratively with the Mississaugas of Scugog Island First Nation, Curve Lake First Nation and Hiawatha First Nation on RIAs specific to the DNNP Licence to Construct application. The reports will include CNSC staff and the Indigenous Nations views on potential impacts on Rights Indigenous and/or Treaty Rights and mitigation and/or accommodation measures to address any identified impacts.

The RIAs, issues and concerns tables and additional consultation activities will help to inform CNSC staff's conclusions and recommendations to the Commission with regards to the adequacy of consultation and engagement for the DNNP Licence to Construct application. This information will be provided as part of the supplemental submission, prior to the Part-2 Licence to Construct hearing.

CNSC staff note that requirements and conditions related to the specific commitments made throughout the DNNP regulatory process may be included in an updated Licence Conditions Handbook. Any updates to the Licence Conditions Handbook will be based on the outcomes of CNSC staff's consultation activities, OPG's engagement as well as the direction by the Commission outlined in the Commission's *Record of Decision – Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment.*

8. REFERENCES

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[3] Statues of Canada, The Constitution Act, 1987, Current to January 1, 2021.

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[6] Minister of the Department of Aboriginal Affairs and Northern Development Canada, Aboriginal Consultation and Accomodation - Updated Guidelines for Federal Officials to Fulfill the Duty to Consult, March 2011.

[7] Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), "Aboriginal and Treaty Rights Information System (ATRIS)," [Online]. Available: https://www.rcaanc-cirnac.gc.ca/eng/1100100014686/1706128627473.

[8] The United Nations, " United Nations Declaration on the Rights of Indigenous Peoples," September 2007.

[9] United Nations Declaration on the Rights of Indigenous Peoples Act Implementation Secretariat, "The United Nations Declaration on the Rights of Indigenous Peoples Act Action Plan," Department of Justice Canada, 2023.

[10] Government of Canada, "Principles respecting the Government of Canada's relationship with Indigenous peoples," 2018.

[11] Government of Canada, "Backgrounder: United Nations Declaration on the Rights of Indigenous Peoples Act," [Online]. Available: https://www.justice.gc.ca/eng/declaration/about-apropos.html.

[12] Government of Canada, "Canadian Environmental Assessment Act, SC 1992, c 37," 1992.

[13] Darlington New Nuclear Power Plant Project Joint Review Panel, "Darlington New Nuclear Power Plant Project Joint Review Panel Environmental Assessment Report," Minister of Environment, Government of Canada, August 2011.

[14] Government of Canada, "Statement of Apology for the Impacts of the 1923 Williams Treaties," November 2018.

[15] Government of Canada, "Impact Assessment Act," (S.C. 2019, c. 28, s. 1).

[16] Ontario Power Generation, "NK054-REP-00531-10771 Darlington New Nuclear Project Indigenous Engagement Report April 2020 to February 2023," e-Doc 7006534.

[17] Ontario Power Generation, "NK054-REP-00531-1330434 Darlington New Nuclear Project Indigenous Engagement Report March 2023 to November 2023, e-Doc 7197466".

Appendix A Issues Tracking Tables

A.1 Issues Tracking Table for the Mississaugas of Scugog Island First Nation (MSIFN) with respect to the Darlington New Nuclear Project (DNNP)

Note – CNSC staff shared this table with MSIFN for their review on February 29, 2024. On March 28, 2024 MSIFN provided feedback and edits. CNSC staff shared an updated version on May 23, 2024 for MSIFN's validation and views on the status of the concern. MSIFN responded with comments on the CNSC's revisions on June 10, 2024.

ID#	Issue or concern	Theme	**Relevant Correspondence** (see Appendix B for details)	OPG Response	CNSC Response	MSIFN Response	Status of issue/ concern
MSIFN #1	MSIFN commented that, although OPG stated certain environmental effects would be reduced with the selection of the BWRX-300 reactor, there remain environmental effects that are of concern to MSIFN. This includes concerns about: • Radiological releases in water and the environment • Human health and safety risks • Amount of cooling water required, to be drawn from Lake Ontario • Thermal effects to Lake Ontario from release of water with higher temperatures • Localized fish impacts as a result of predicted thermal plume • Climate change preparedness	Environmental effects	March 20, 2023 MSIFN's comments on OPG's EIS review and PPE Documents August 29, 2023 CNSC staff response letter April 23 2024 CNSC response to MSIFN's outstanding concerns	OPG has been having discussions with MSIFN to better understand and work to address their concerns about potential environmental impacts. In OPG's Environmental Monitoring and EA Follow up (EMEAF) Plan, OPG notes that they endeavor to continue to work with Indigenous Nations and communities to appropriately identify the Rights impacted by the Project and to achieve feasible mitigation measures and/or accommodation. This includes OPG's commitment to greater inclusion of MSIFN in their Environmental Assessment follow up program and monitoring. OPG has committed to working with the Nations to design an Environmental Monitoring Augmentation plan to ensure that an Indigenous lens is applied to the existing monitoring program. This is slated to begin in Q2 of 2024.	CNSC staff note that even if the Commission determines that the BWRX-300 is bounded by the EA, OPG will still be required to demonstrate that the deployment of the BWRX-300 reactors will remain protective of human health and the environment, pursuant to the *Nuclear Safety and Control Act* in a future proceeding. CNSC staff indicated that CNSC staff will present its recommendations following the technical review of OPG's application for a licence to construct a single BWRX-300 reactor in a future Commission proceeding, should the project proceed. CNSC staff have reviewed the EA, OPG's EIS Review, the updated PPE, as well as relevant supporting documentation. CNSC staff expect no significant residual adverse environmental effects from the deployment of up to four BWRX-300 reactors, provided the mitigation measures identified in the EA are implemented, as required by OPG's EA follow-up program. CNSC staff also conclude that OPG has adequately assessed changes to baseline environmental conditions for environmental components assessed in the EA. The Commission Decision on the hearing on the applicability the EA to OPG's chosen technology also indicated that BWRX-300 is not fundamentally different from the technologies assessed in the Environmental Assessment and a new EA is not required. The	MSIFN has not had significant discussions with OPG regarding the comments and feedback, as encouraged by the CNSC. Many concerns and questions raised by MSIFN in the March 20th, 2023, submission have yet to be addressed by OPG nor the CNSC. Comments that remain outstanding include: • Impacts to water from usage as coolant and moderator in SMRs • Environmental effects of intake and discharge structures offshore, and mitigations • Decommissioning and end-of-life plans for DNNP site, including other OPG uses • Preliminary Decommissioning Plan (PDP) • Long-term protection of created SAR habitat on site via conservation easement or restrictive covenant • Increased volume of solid waste generated, with no long-term plan for safe management and storage • Impacts to aquatic SAR, proposed fish protection	The EA concluded that no significant residual adverse environmental effects are expected provided the mitigation measures identified in the EA are implemented, as required by OPG's EA follow-up program. The Commissions decision concluded that the predicted environmental effects associated with the BWRX-300 reactor technology are bounded by the EA. CNSC staff's view is that these concerns have and will continue to be addressed through the responses and commitments of OPG and CNSC staff to the extent possible within the CNSC's mandate and regulatory requirements.

ID#	Issue or concern	Theme	Relevant Correspondence (see Appendix B for details)	OPG Response	CNSC Response	MSIFN Response	Status of issue/ concern
	• Fish impingement and entrainment				Commission concluded that the predicted environmental effects associated with the BWRX-300 reactor technology are bounded by the EA. CNSC staff confirmed that OPG has been collaborating with MSIFN to better understand their concerns regarding potential impacts on the environment. However, MSIFN notes that discussions are ongoing. As per REGDOC-3.2.2: Indigenous Engagement, CNSC staff will continue to monitor the OPG's Indigenous engagement activities, including with regards to monitoring and follow-up measures. CNSC staff are committed to collaborating with MSIFN on environmental monitoring and all other follow-up activities with regards to the DNNP and other nuclear projects within MSIFN territory	measures, and fish habitat compensation plans • Habitat fragmentation and the East-West wildlife corridor MSIFN disagrees that there will be no significant residual adverse environmental effects from the deployment of up to four BWRX-300 reactors. The mitigation measures suggested thus far do not outweigh the negative environmental impacts of the project, and OPG is not willing to commit to protecting SAR habitat on the site long-term. Further, this conclusion is not reasonable given the lack of decommissioning plan. Further consultation and collaboration are required for OPG to fully understand MSIFN's concerns regarding project impacts. OPG must respond with legally binding commitments.	However, CNSC staff acknowledge that MSIFN remains concerned about this issue and disagrees that there will be no significant environmental effects, including with respect to the Low & Intermediate Level Nuclear Waste Facility for which MSIFN has not been consulted and for which MSIFN and other WTFNs have not provided consent. CNSC staff are committed to working with OPG and MSIFN throughout the life-cycle of the project, should it proceed, to continue to find ways to address the concerns raised.
MSIFN #2	MSIFN has raised concerns regarding impacts to water from usage as a coolant and moderator in SMRs.	Environmental effects	March 20, 2023 MSIFN's comments on OPG's EIS review and PPE Documents August 29, 2023 CNSC staff response letter April 23 2024 CNSC response to MSIFN's	BWR light water coolant is also the moderator, this is different from the CANDU reactor design where the coolant and moderator are separated. The BWRX-300 has a closed coolant loop containing demineralized H2O. This closed loop does not require any lake water and will not discharge any coolant to the lake. Lake water is used as the normal heat sink but is physically separated from the coolant/moderator loop. As mentioned, lake water is the normal heat sink and heat from the condenser is transferred to the lake through a cooling	CNSC staff note that that it will not be lake water that is used to cool the fuel or provide neutron moderation for the BWRX-300. Demineralised water, either produced on-site in a dedicated Water Treatment Plant, or shipped in from an off-site treatment plant will be used as coolant/moderator. This water is not discharged to any receiving body during normal operations—it is intended to be continually recirculated.	The DNNP Circulating Cooling Water (CCW) systems will utilize a Once-Through Cooling system to extract heat from the condenser, using water from Lake Ontario. Water will be drawn through an offshore, lakebed intake structure into an onshore forebay (pumphouse) via a subterranean intake tunnel; pumped from the forebay through the main condenser and closed loop cooling water heat exchanger; then discharged back to the lake through a series of diffuser ports. The discharge of heated	CNSC staff's view is that this concern has and will continue to be addressed through the responses of OPG and CNSC staff, to the extent possible within the CNSC's mandate and regulatory requirements. However, CNSC staff are committed to working with OPG and MSIFN throughout the life-cycle of the project,

ID#	Issue or concern	Theme	Relevant Correspondence (see Appendix B for details)	OPG Response	CNSC Response	MSIFN Response	Status of issue/ concern
			outstanding concerns	water loop which is completely isolated from the moderator/coolant loop.		water from the CCW remains an issue for MSIFN.	should it proceed, to continue to find ways to address the concerns raised. MSIFN's view is that this concern has not been addressed.
MSIFN #3	MSIFN has raised concern regarding environmental effects of intake and discharge structures offshore, and mitigations. MSIFN requested more information about the construction of the intake and discharge structures offshore, including their size and location in Lake Ontario as well as anticipated environmental effects/mitigations.	Environmental effects	March 20, 2023 MSIFN's comments on OPG's EIS review and PPE Documents August 29, 2023 CNSC staff response letter April 23 2024 CNSC response to MSIFN's outstanding concerns	The construction of intake and outfall conduits will be done with a Tunnel Boring Machine (TBM). Two onshore shafts will be excavated to launch the TBM and build the two tunnels (intake and outfall). Excavated rock is removed from the tunnel and logistics are provided into the tunnel. The two onshore launch shafts are anticipated to be approximately 14m in diameter and approximately 52m deep. The finished diameter of the offshore intake shaft is expected to be 6 m in diameter to provide adequate flow into the tunnel. The intake structure will minimize intake velocities	CNSC staff note that OPG has yet to submit the final design of the intake and diffuser to the CNSC for review. CNSC staff currently expect OPG to submit this information in early summer 2024. However, to aid in siting of the intake and diffuser of DNNP, OPG conducted aquatic characterization studies in 2018 and 2019. Results of the characterization studies indicated high variability throughout the study area, it was determined there was no particular advantage to siting the intake and diffuser deeper than 15m or between gravel or sand substrate. The aquatic characterization indicated ideal siting for the intake and diffuser was >10m and <15m to avoid placement within the preferred spawning locations of round whitefish (<10m) and deeper benthic species (deepwater sculpin) to minimize impact on their preferred habitat. To mitigate the effects of increased thermal energy deposited into the lake, the outlet structure includes many "diffusers" intended to spread the heated water across a larger area. A turbulent mixing zone allows for further diffusion of the deposited heat. OPG is required to design the outfall to ensure that it will not discharge heated water with an average temperature, beyond this mixing zone, greater than 2 degrees Centigrade above ambient. This is to ensure protection of Round Whitefish larvae during their winter breeding periods. This	MSIFN will need adequate time to review the final design of the intake and diffuser for the CCW system, including the requirement to design the outfall to ensure that it will not discharge heated water with an average temperature, beyond this mixing zone, greater than 2 degrees Centigrade above ambient, and the potential local impacts of heated water less than 2 degrees Centigrade above ambient.	Based on the information available to date, CNSC staff's view is that this concern will be addressed through the responses of OPG and CNSC staff. CNSC staff will ensure that OPG's activities continue to remain within the bounds of the EA and the required mitigation measures are implemented by OPG. CNSC staff remain committed to continuing to consult and engage with MSIFN throughout all phases of the project, should it proceed. CNSC staff are also committed to taking an adaptive management approach to the DNNP follow up and environmental monitoring with MSIFN. CNSC staff will work

ID#	Issue or concern	Theme	**Relevant Correspondence** (see Appendix B for details)	OPG Response	CNSC Response	MSIFN Response	**Status of issue/ concern**
					requirement is documented in DNNP Commitment D-C-1.2.		collaboratively with MSIFN to ensure OPG fulfils their commitments. MSIFN's view is that this concern has not been addressed.
MSIFN #4	MSIFN raised concern regarding Impacts to aquatic SAR, proposed fish protection measures, and fish habitat compensation plans. MISFN asked whether OPG be creating any beneficial actions or offsetting as they are likely to impact two SAR species and whether a DFO Authorizations be required. MSIFN asked how there is no further concern for the fish species if entrainment of Deepwater Sculpin has been identified recently on site? What does OPG mean by "fish protection measures will be taken if needed at the intake structures". MSIFN requests that fish protection measures be taken at the intake structures regardless of prevalence of SAR or other factors.	Aquatic Environment	March 20, 2023 MSIFN's comments on OPG's EIS review and PPE Documents August 29, 2023 CNSC staff response letter April 23 2024 CNSC response to MSIFN's outstanding concerns	The location and design of the intake will include screening and reduced intake (approach) velocities to mitigate fish impingement and entrainment with an emphasis on excluding Deepwater Sculpin and American Eel. Furthermore, the operation of the condenser circulating water and service water requires a smaller flow rate than the description in the EIS. Residual adverse effects different than those in the EIS are not anticipated. The loss of aquatic biota due to lake infilling is anticipated to be less than predicted in the EIS because no lake infilling is required with the BWRX-300 and the footprint of the in-water structures would be smaller. OPG has had many discussions with MSIFN since this comment was made in early 2023 and continue to actively engage on the topics of intake/discharge design and construction planning as well as aquatic impacts and permitting.	CNSC staff note that OPG will have to acquire a Fisheries Act Authorization (FAA) from the Department of Fisheries and Oceans Canada (DFO) before conducting any activities with the potential to harm fish and fish habitat (in water works, construction and operation of the condenser cooling water system etc.). OPG will be required to record number of fish, species, and age class of fish impinged and entrained and then propose and implement compensation measures for the fish lost. OPG will have to implement offsetting or compensation measures, commensurate with observed fish losses, and will be outlined in their authorization and approved by DFO. DFO and OPG will be required to consult with MSIFN and other Indigenous Nations and communities on the Fisheries Act Authorization. CNSC staff commit to informing DFO and OPG of MSIFN's interested to be consulted on this topic. Although entrainment of Sculpin has been identified at the existing DNGS, subsequent monitoring studies performed by OPG, and reviewed and accepted by CNSC staff, have not detected significant interactions with the DNGS intake structures (e.g., Deepwater Sculpin were not entrained at DNGS in 2004 or 2006 but were entrained in 2015/2016. Deepwater Sculpin population in Lake Ontario had been found to be recovering and densities and biomass may be similar to other Great Lakes (Weidel et al. 2017). Furthermore, the Deepwater Sculpin population in	MSIFN will need adequate time prior to the Leave to Construct Application to review and comment the FAA application pre-submission, including fish protection, mitigation, offsetting and compensation measures where MSIFN expects a collaborative process with OPG to design and implement such measures.	CNSC staff's view is that this concern will be addressed through the responses of OPG and CNSC staff and through the consultation that will be required for the FAA by DFO and OPG, to the extent possible within the CNSC's mandate and regulatory requirements. CNSC staff will ensure that OPG's activities continue to remain within the bounds of the EA and the required mitigation measures are implemented by OPG. CNSC staff remain committed to continuing to consult and engage with MSIFN throughout all phases of the project, should it proceed. MSIFN's view is that this concern has not been addressed.

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					Lake Ontario may be nearing its carrying capacity (Weidel et al., 2019). This conclusion is expected to remain applicable to the intake and discharge structures for the DNNP (only one Deepwater Sculpin larva was collected in spring 2011 within the DNNP Site Study Area, and one Deepwater Sculpin larva was collected from larval tows in 2018 within the DNNP Site Study Area). OPG would be required to implement fish protection or adapt mitigation measures to continue to ensure that DNNP activities do not introduce significant environmental effects to aquatic biota. For species that are listed as Endangered or Threatened under Schedule 1 of the federal Species at Risk Act, OPG is required to obtain permits from DFO prior to commencing any work and would be required to comply with direction from those regulatory authorities.		
MSIFN #5	MSIFN raised concern regarding habitat fragmentation and the East-West wildlife corridor.	Terrestrial wildlife and habitat	March 20, 2023 MSIFN's comments on OPG's EIS review and PPE Documents August 29, 2023 CNSC staff response letter April 23 2024 CNSC response to MSIFN's outstanding concerns	OPG has monitored the biodiversity on the DN site annually for more than 20 years (since 1997) to continually inform our biodiversity program. OPG is committed to maintaining access for wildlife and travel on the east-west wildlife corridor during DNNP site preparation and construction activities to the extent practicable; and to enhance the corridor function for the long-term. DN site annual biodiversity monitoring has observed that wildlife is present and travelling along the east-west corridor, despite roads and other site activities that may disrupt the landscape connectivity. OPG has been examining the use of the Darlington site by wildlife and potential ways to strengthen the corridor. OPG will collaborate with the	CNSC staff note that the CMD on the applicability of the EA to the chosen technology indicates the following "the interruption of wildlife travel along the east-west corridor across the Darlington Nuclear site was considered an adverse effect of the DNNP, and the EA identified incorporating, to the extent practicable, design measures to maintain access for wildlife travel on the east-west wildlife corridor during construction activities, and to enhance the function of the corridor for the long term as a mitigation measure. OPG has conducted annual biodiversity monitoring on the Darlington Nuclear site, including monitoring of wildlife traffic along the east-west corridor, and has noted the presence of wildlife despite roads and other major disturbances on the site. The mitigation measures identified in the EA would continue to address	OPG has yet to provide MSIFN or other WTFNS with legally binding commitments to protect any lands required for mitigation measures for the long-term. Without legally binding commitments to protect lands, OPG cannot guarantee that such lands will indeed be protected for the long-term. The recent addition of the Low and Intermediate Level Nuclear Waste Facility creates significant additional land constraints for mitigation measures and ecological compensation approaches.	CNSC staff's view is that this will be addressed through the responses of OPG and CNSC staff, to the extent possible within the CNSC's mandate and regulatory requirements for a Licence to Construct application. CNSC staff will ensure that OPG's activities continue to remain within the bounds of the EA and the required mitigation measures are

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				WTFN on any design enhancements to the wildlife corridor.	adverse effects on landscape connectivity and would apply to the deployment of the BWRX-300 reactors." CNSC staff note that OPG's proposed mitigation includes incorporating to the extent practicable in the DNNP design, measures to maintain access for wildlife travel on the east-west wildlife corridor during construction activities; and to enhance the corridor function for the long-term.		implemented by OPG. CNSC staff remain committed to continuing to consult and engage with MSIFN throughout all phases of the project, should it proceed. MSIFN's view is that this concern has not been addressed.
MSIFN #6	MSIFN raised concerns about impacts from the DNNP on Species at Risk (SAR) and with the Endangered Species Act permit for the DNNP. MSIFN raised concerns regarding the lack of guarantee for long-term protection of the SAR habitat on site. MSIFN requested that a conservation easement or restrictive covenant be placed on the created SAR habitat to ensure it is not destroyed during further site prep for reactors 2-4. MSIFN notes that currently, OPG does not have planned locations for beneficial action areas to compensate for SAR impacts as a result of these units, so MSIFN is unable to confirm whether appropriate compensation measures exist.	Species at Risk	March 20, 2023 MSIFN's comments on OPG's EIS review and PPE Documents August 29, 2023 CNSC staff response letter April 23 2024 CNSC response to MSIFN's outstanding concerns	OPG has been having ongoing discussions with MSIFN regarding their concerns with Species at Risk (SAR) and the *Endangered Species Act* (ESA) requirements (offsetting and habitat creation). OPG continues to have discussions on offsite restoration with the WTFNs. Through consultation with MSIFN and other WTFN during the ESA permitting process, OPG has made commitments to address MSIFN concerns that are in addition to the specific ESA permitting requirements. These include: • A 40:1 ratio for replanting of the Category #2 butternut removed. • A 3:1 ratio for replacement of trees removed under the ESA permit. • Involve WTFN in developing monitoring plans and plans for site restoration and plantings. OPG has also committed to including MSIFN in follow-up monitoring activities • Share with WTFNs the monitoring reports.	CNSC staff note that following the completion of the EA, the Bank Swallow and its habitat has been listed as threatened under both the federal Species at Risk Act [25] and the Ontario *Endangered Species Act* [24]. Project activities that have an adverse effect on the Bank Swallow populations or habitat (e.g., shoreline stabilisation) would require approvals and implementation of appropriate compensatory measures from both Environment and Climate Change Canada (ECCC) and the Ontario Ministry of the Environment, Climate, and Parks (MOECP). The Little Brown Myotis, the Northern Myotis, and the Tri-coloured Bat, as well as their habitat, are listed as endangered species under the Ontario *Endangered Species Act.* Project activities that have an adverse effect on the endangered Bat population or their habitat would require approvals and implementation of appropriate compensatory measures from the Ontario MOECP. CNSC staff note that OPG has been issued a permit in March 2024 for work affecting SAR species for units 2-4. Health of SAR species is assessed throughout the lifecycle of the facility through the cyclical nature of environmental risk assessments, which assess the potential health impacts to species around the facility by	MSIFN notes that OPG's response should specifically say "Offsite Restoration Fund" for restoration outside of OPG's site control. The CNSC should be aware that the concern regarding long-term protection of SAR habitat remains outstanding and is further emphasized as OPG seeks ESA permits for SMR units 2-4. Currently, OPG does not have planned locations for beneficial action areas to compensate for SAR impacts as a result of these units, so we are unable to confirm whether appropriate compensation measures exist. The recent addition of the Low and Intermediate Level Nuclear Waste Facility creates significant additional land constraints for mitigation measures and ecological compensation approaches.	CNSC's view is that the concerns with regards to SAR have and will continue to be addressed through the responses and commitments of OPG and CNSC staff, within the CNSC's mandate and regulatory requirements. CNSC staff note that Units 2-4 are out of scope of the Commissions decision for this Licence to Construct application. CNSC staff will ensure that OPG's activities continue to remain within the bounds of the EA and the required mitigation measures are implemented by OPG. CNSC staff remain committed to continuing to consult and engage with MSIFN throughout all

ID#	Issue or concern	Theme	**Relevant Correspondence** (see Appendix B for details)	**OPG Response**	**CNSC Response**	**MSIFN Response**	**Status of issue/ concern**
				• Sourcing seeds locally for all plantings, if possible. • Installing bluebird boxes in the new meadow creation area	modelling impacts of contaminants of potential concerns alongside any physical effects (such as noise) CNSC staff work with partners in ECCC/MECP to review these plans, but species at risk permitting is ultimately the jurisdiction of the Province, given the project is occurring on provincial lands. CNSC staff are aware that OPG has been engaging MSIFN on permits of interest, including the *Endangered Species Act* permit[2]. CNSC staff are committed to continuing to work with MSIFN and OPG to address their concerns and also collaborate on follow up activities and monitoring.		phases of the project, should it proceed. However, CNSC staff acknowledge that MSIFN has outstanding concerns. CNSC staff are committed to working with OPG and MSIFN throughout the life-cycle of the project, should it proceed, to continue to find ways to address the concerns raised. MSIFN's view is that this concern has not been addressed.
MSIFN #7	MSIFN expressed an interest in a Harvesting Agreement to have access to the Darlington Nuclear site, to ensure Treaty Rights are not lost.	Indigenous and/or Treaty Rights		OPG recognizes that while the assessment of environmental effects from DNNP has been satisfied from the Western/regulatory perspective, it may not fully address the impact of the DNNP on Indigenous inherent and treaty Rights as they are understood today. OPG endeavors to continue to work with Indigenous Nations and communities, including MSIFN, to appropriately identify the Rights impacted by the Project and to achieve feasible mitigation measures and/or accommodation. OPG has been engaging with MSIFN to better understand concerns about the DNNP specific impacts on MSIFN's[1] Indigenous and/or Treaty Rights, through regular and ongoing meetings. OPG is in discussions with representatives of the WTFN to develop a pathway forward that includes a scoping exercise in 2024 to begin	CNSC staff are committed to working collaboratively with MSIFN[2] to conduct a RIA for the DNNP Licence to Construct application . Through discussions between MSIFN and CNSC staff, it was determined that CNSC staff will draft the RIA and share with MSIFN for input and feedback. CNSC staff acknowledge MSIFN's concerns regarding the RIA time constraints limiting the understanding of MSIFN's Rights in relation to the Project and their concern that the WTFN's were not involved in designing the RIA framework. The goal of the RIA will be to gather available information, analyze potential impacts to Rights based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, mitigate or compensate for any identified impacts in order to make a collaborative recommendation to the Commission about potential impacts on Rights from the DNNP[3].	This point should include reference to the extremely short timeline provided by the CNSC to complete the RIA, which will inevitably result in limited understanding of MSIFN's rights in relation to the project. MSIFN will consider working collaboratively with the CNSC to contribute to an RIA process that respects realistic timelines for an assessment with results that will impact MSIFN members for generations to come. MSIFN will not participate in an RIA process that does not respect realistic timelines. For the record, it should also be mentioned that the draft was completed by the CNSC, and not MSIFN. MSIFN and other WTFNs were not involved in designing the studyPlease ensure OPG is aware that the goal of the RIA and associated studies is to ensure the	CNSC staff's view is that the concerns around impacts to Treaty Rights will continue to be discussed and addressed through the RIA process. The full assessment and conclusions will be submitted to the Commission prior to the Licence to Construct Part-2 hearing. The RIA will include information, perspectives and recommendations from both CNSC staff's and MSIFN's perspectives.

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				to develop a plan to undertake an Indigenous Knowledge Study, which could include or lead to a cumulative effects study, an updated RIA and opportunities to identify and address the options for extended engagement with regards to environmental protection OPG has also indicated support for on-site harvesting on seeds/ nuts, such as from Butternut trees, for offsite planting.	CNSC staff remain committed to collaborating with MSIFN and other interested WTFN on an Indigenous Knowledge and Land Use study specific to the DNNP to help gather more specific information and data regarding WTFN Rights and interests that could be potentially impacted by the DNNP and other projects in the treaty territory. The results of these studies could then help to inform an adaptive management approach and EA follow-up monitoring program, which will ensure the DNNP project and related activities would be protective of their Rights and interests.	DNNP project will be protective of MSIFN's Rights and interests.	MSIFN will continue to object to the CNSC's unilateral approach to the RIA and absence of consultation in designing and implementing the RIA. MSIFN is considering all reasonable actions to ensure the CNSC does not advance the RIA as currently proposed.
MSIFN #8	MSIFN commented that it understood that the DNNP Project is subject to the Ontario Environmental Assessment Act, which typically has an expiry date for most projects. Please explain why there is no expiry date on the EA decision for DNNP, as well as how OPG justifies the project remaining within the original scope from 2011. The natural environment on the DNNP site as well as the surrounding land use has changed significantly over the last decade and must be taken into consideration. It should be noted that the project delay allowed significant ecological lands and SAR habitat to thrive and grow on site, which are now being impacted by project activities.	Changes in baseline	March 20, 2023 MSIFN's comments on OPG's EIS review and PPE Documents August 29, 2023 CNSC staff response letter April 23 2024 CNSC response to MSIFN's outstanding concerns	To address the passage of time, the changes in existing environmental conditions were reviewed as part of the EIS Review. For example, additional terrestrial and aquatic data was collected through a variety of studies conducted since the EIS. The results of the review of existing environmental conditions were independent of the reactor technology chosen and were considered in the assessment of effects on Valued Ecosystem Components (VECs) and new receptors. The assessment of effects considered mitigation measures to reduce or eliminate environmental effects. The listing of two fish species (Lake Sturgeon and American Eel) as endangered under Ontario's Endangered Species Act (ESA) did not alter the determinations made with respect to residual adverse effects of the project and do not change the overall determination of significance of residual adverse effects made in the EIS. Prior to commencing in-water works, these two species be included as part of the permitting process under the ESA.	Condition G.3 of OPG's site preparation licence (PRSL) 18.00/2031 [3] requires that OPG monitor land use in a 10-kilometre radius surrounding the Darlington site, and work with the Municipality of Clarington and the Region of Durham to prevent sensitive developments in these areas. Under that licence condition, OPG is required to notify the CNSC if there are sensitive land uses proposed within 3 kilometres of the Darlington site. Furthermore, OPG is required to provide CNSC with an annual report summarising licensed activities conducted under the PRSL, which includes a summary of OPG's activities under licence condition G.3. CNSC staff's response also noted that OPG's EIS Review report provides a description of the changes to the local and regional environment, with respect to the terrestrial and atmospheric components assessed under the DNNP EA. OPG has continued to carry out terrestrial environment studies since the completion of the EA. OPG's EIS Review report states that as of 2022, the terrestrial environment characteristics remain similar to those described in the EA, with the exception of several changes to species listed as species at risk (SAR) under the	Again, OPG does not currently have planned locations for the beneficial action areas required to compensate for SAR impacts from Units 2-4. We are unable to confirm whether compensation measures are adequate. The recent addition of the Low and Intermediate Level Nuclear Waste Facility creates significant additional land constraints for mitigation measures and ecological compensation approaches.	CNSC's view is that the concerns with regards to changes in the environment and surrounding land use since the EA have and will continue to be addressed through the responses and commitments of OPG and CNSC staff, within the CNSC's mandate and regulatory requirements. CNSC staff note that Units 2-4 are out of scope of the Commissions decision for this Licence to Construct application. CNSC staff recognizes that MSIFN has outstanding concerns and is committed to working with OPG and MSIFN throughout the life-cycle of the project

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				Due to the smaller footprint of the BWRX-300, there are opportunities for some on-site habitat to be retained for bats (new mammal species identified since the EIS) and bank swallows (change in conservation status since the EIS). Additional studies were completed since the EIS and the effects from dust, noise, and hydrology/hydrogeology were evaluated and anticipated to be minor. Any adverse effects of the DNNP will be subject to permitting/approval requirements under the relevant legislation. Note that the DNNP falls under Federal jurisdiction, thus it is subject to the Federal Environmental Assessment process and not the provincial EA process. The Environmental Assessment conducted under the Canadian Environmental Assessment Act remains valid and has no expiry date. This was confirmed by the Commission in its April 24, 2024 decision, which determined that the environmental assessment for Ontario Power Generation's Darlington New Nuclear Project is applicable to the selected reactor technology.	federal Species at Risk Act or the province of Ontario's Endangered Species Act (ESA)[3]. Project activities that have an adverse effect on identified SAR or their habitat, under federal or provincial jurisdiction, require approvals and implementation of appropriate compensatory measures from responsible authorities—for example, Environment and Climate Change Canada (ECCC) and the Ontario Ministry of the Environment, Climate, and Parks (MOECP). CNSC staff reviewed the studies provided by OPG on several species at risk, including bats, bank swallows, other mammals, and vegetation on the DNNP site, and concluded that the measures proposed to mitigate the effect on these species are adequate[4]. Additional information about the CNSC's view and proposed next steps to address MSIFN's concern regarding SAR impacts are included in Row #6.		to continue to find ways to address the concerns raised.
MSIFN #9	MSIFN raised concerns about airborne radioiodine emissions, and their overall effects on the general environment, as well as human and non-human biota in relation to the operation of the DNNP[1] MSIFN understand that issues relating to radioactive materials will be assessed as part of a future license to operate application, and not	Emissions	March 20, 2023 MSIFN's comments on OPG's EIS review and PPE Documents August 29, 2023 CNSC staff response letter April 23 2024 CNSC response to MSIFN's	The total radioactivity in the airborne emissions for the DNNP will be lower that previously assessed in the EIS. The resulting dose is a very small fraction of the regulatory dose limit for members of the public and is not a risk to human or non-human health.	The predicted airborne emissions of radioiodines during normal operations are slightly higher than the values in the EA. CNSC staff have reviewed OPG's analyses and concluded that the contribution of releases to the overall radiological dose to human and non-human biota, due to normal operations of the BWRX-300, is a fraction of the regulatory dose limit for members of the public and is not expected to constitute a hazard to human or non-human health. Furthermore, any potential approval of the DNNP Licence to Construct would not authorize or involve any radioactive materials. Issues relating to radioactive materials would be further considered	MSIFN recommends that as a condition of the approval of the DNNP License to Construct, OPG be required to conduct a site specific Human Health and Ecological Risk Assessment with respect to predicted airborne emissions of radioidodines during normal operations.	CNSC staff are of the view that the concerns have been addressed within the CNSC's mandate and regulatory requirements for a Licence to Construct application. CNSC staff are committed to ongoing discussions regarding radioiodine emissions at each

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	during the license to construct. MSIFN is aware that the volumetric inventory of solid radioactive wastes, and the predicted airborne emissions, are slightly higher than the values reported in the EA. OPG and the CNSC must use this information to plan for the used nuclear fuel and emissions prior to granting a license to operate.		outstanding concerns		and assessed as part of any potential future licence to operate application received by the CNSC for the DNNP.		licensing stage, should the project proceed. MSIFN's view is that this concern has not been addressed.
MSIFN #10	MSIFN raised concerns regarding the applicability of the PPE approach and what is considered a fundamental difference between chosen reactor technologies.	Environmental assessment process	March 20, 2023 MSIFN's comments on OPG's EIS review and PPE Documents August 29, 2023 CNSC staff response letter April 23 2024 CNSC response to MSIFN's outstanding concerns	The Plant Parameter Envelope process is technology neutral. What is important is the development of a set of parameters with which any selected technology under consideration can be bounded. Each parameter is defined as a minimum or maximum value. The parameter value is assigned based on the maximum or minimum value of all reactor technologies under consideration. Any other reactor technologies considered in future will be bounded by that limiting parameter. Any parameter where the BWRX-300 was the limiting technology, was updated to reflect the BWRX-300 value (there were 8 of these). The updated PPE does not alter the EIS conclusions.	The PPE identified a set of design parameters and associated limiting values from each of the reactor technologies under consideration by the Government of Ontario at the time. It described a bounding scenario for the DNNP in which the selection of a reactor technology would fit, and provided a basis for the development of the EA. In 2011, both the CNSC and the Joint Review Panel (JRP) accepted the PPE as a bounding envelope of plant design and site characteristics and have established the PPE within the licensing basis for the DNNP. CNSC staff's assessment of the PPE and EIS Review reports focused on determining whether the predictions and conclusions of the EA remain valid, taking into consideration the BWRX-300 technology selected by OPG. CNSC staff reviewed OPG's analysis of the BWRX-300 against the PPE to determine whether any of the 198 parameters fall within or outside the PPE. For parameters that were outside the PPE, CNSC staff reviewed OPG's analysis to determine whether the parameter would impact or alter the conclusions of the EA. CNSC staff conducted a technical review of OPG's EIS Review against the DNNP EA to evaluate potential changes in environmental effects introduced by the BWRX-300.In conclusion, when taking into consideration proposed	MSIFN does not have the information needed to conclude that the DNNP will not lead to residual adverse impacts on the environment. As stated, OPG's plans are currently not finished for things such as SAR beneficial actions, fish impacts and offsetting, and decommissioning plans for the site. MSIFN and the CNSC must understand the proposed mitigation measures fully before the license to construct hearing. The recent addition of the Low and Intermediate Level Nuclear Waste Facility creates significant potential additional risks to the project for which there has been no meaningful consultation or early engagement. The additional land constraints for mitigation measures and ecological compensation approaches.	CNSC staff are of the view that the concern regarding the applicability of the PPE approach and the fundamental difference has been addressed as per the response column, as well as by the Commission decision on the January 2024 hearing. MSIFN's view is that this concern has not been addressed.

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					mitigation measures, CNSC staff do not expect the DNNP to lead to residual adverse impacts on the environment, and determine that the EA is applicable to the chosen technology. CNSC staff note that the Commission's Record of Decision Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment (Paragraph 31) indicates that the validity of conducting the EA on a PPE basis has been upheld and is not in question at this time. The Commission also determined that the BWRX-300 is not fundamentally different from the technologies assessed in the EA. Additional information about the CNSC's view and proposed next steps to address MSIFN's concern regarding SAR impacts are included in Row #6, fish impacts in row 4 and OPG's decommissioning plan in row 11.		
MSIFN #11	MSIFN raised concerns about solid radioactive wastes and their overall effects on the general environment, as well as human and non-human biota in relation to the operation of the DNNP. MSIFN's concerns included: • increased volume of solid waste generated, with no long-term plan for safe management and storage • the planning processes for nuclear waste for the DNNP are not clear and	Waste management	March 20, 2023 MSIFN's comments on OPG's EIS review and PPE Documents August 24, 2023 email from MSIFN August 29, 2023 CNSC staff response letter September 21, 2023 CNSC staff response email April 23, 2024 CNSC staff	OPG has been discussing and engaging with the MSIFN to better understand, respond to and work to addressing their concerns related to waste management, including providing support for MSIFN to conduct a Benchmark review of International Best Practices for the management and interim storage of used nuclear fuel with current OPG practices. MSIFN is in preliminary conversations with OPG regarding a term of reference for advancing this review. MSIFN representatives have toured both the DNNP lands and the Darlington Waste Management Facility. Additionally, OPG have provided opportunities to MSIFN, including Chief and Council to visit and tour the DNNP lands and/ or Darlington Waste Management Facility.	The Plant Parameter Envelope (N-REP-01200-10000 Rev. 5) analysis for the BWRX-300 identified that the solid volumetric activity (Bq/m^3) would exceed the values assessed in the Environmental Assessment. This exceedance was found for some radionuclides, whereas others were below the values established for the EA. That is to say that whilst some radionuclides are higher in activity, the overall activity of all the radionuclides is still within the bounds of the EA. OPG has provided more comprehensive modeling of radionuclide production in the later revision of the Plant Parameter Envelope (N-REP-01200-10000 Rev. 6) using specific data from other Boiling Water Reactors. The revised analysis is now within PPE values for both waste activity (Bq/y) and volume (m^3/y). CNSC staff have reviewed OPG's analyses and concluded that the contribution of releases to the overall radiological dose to human and non-	It should be noted that MSIFN has requested, on multiple occasions, a funded review of international best practices for the management and storage of used nuclear fuel at OPG sites. We are in preliminary conversations with OPG regarding a terms of reference for advancing this review, however, OPG has yet to commit in writing to supporting this "benchmarking" study, and we have four months to go before the License to Construct hearing. MSIFN is interested in collaborating on the PDP and staying informed about plans and strategies for decommissioning the DNNP at each licensing stage.	CNSC staff are of the view that the concerns regarding OPG's waste management have been addressed within the CNSC's mandate and regulatory requirements for a Licence to Construct. CNSC staff are committed to ongoing discussions and consultation regarding OPG's nuclear waste management program at future potential licensing processes and/or stages (I.e. Licence to Operate)

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	transparent in the context of the regulatory processes around the applicability of the DNNP EA and the plant parameter envelop. • MSIFN requested information about the requirement for consent from Treaty Rights holders. • Lack of decommissioning plan and long-term plan for safe management and storage of nuclear waste in Ontario		response to MSIFN's outstanding concerns		human biota, due to normal operations of the BWRX-300, is a fraction of the regulatory dose limit for members of the public and is not expected to constitute a hazard to human or non-human health. Furthermore, any potential approval of the DNNP Licence to Construct would not authorize or involve any radioactive materials. Issues relating to radioactive materials would be further considered and assessed as part of any potential future licence to operate application received by the CNSC for the DNNP Joint Review Panel concluded that radioactive and used fuel waste is not likely to result in significant adverse environmental effects, considering the implementation of controls and measures required under the CNSC regulations for radioactive waste management. CNSC expect OPG to have a credible plan for the management of all radioactive wastes and that staff will evaluate OPGs proposed plans for the long-term management of wastes produced by the DNNP. This will be of particular focus should this project progress to the Licence to Operate phase. These plans will be incorporated in the Preliminary Decommissioning Plan (PDP), which is a living document that captures the plans and strategies for the eventual decommissioning of the DNNP[3]. The PDP is revised at each stage of the licensing process and captures the lifecycle planning for decommissioning and waste management. Throughout all aspects of the licensing process for the DNNP, CNSC staff will ensure that MSIFN have meaningful opportunities to participate and be consulted, to ensure all issues and concerns are considered.		should the project proceed. MSIFN's view is that this concern has not been addressed.
MSIFN #12	MSIFN raised concerns about OPG using EA data collected in previous projects that were covered by outdated EA	Environmental monitoring	November 3, 2023 CNSC response email	OPG has shared the DNNP Environmental Monitoring and EA Follow Up Plan (EMEAF) plan with MSIFN for their review, sought feedback on the plan as well as	The EA follow-up program for the DNNP is still valid and CNSC staff are ensuring OPG completes the actions as required. CNSC staff note that OPG is required to implement an EA	The federal government must uphold the honor of the Crown, which requires regulators and officials to act with honor, integrity, good faith, and	CNSC staff's view is that these concerns have been addressed to the extent possible

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	regulations. MSIFN requested that CNSC staff confirm if the EA follow-up program from the DNNP EA is still valid and how it compares to current requirements and expectations for EA follow-up programs. MSIFN expressed concerns about the scope and expectations of an EA follow up program under CEAA 1992 versus the Impact Assessment Act 2019. MSIFN has requested that the CNSC orders a mandatory follow up program that follow the principles of the IAA framework	and follow up program	April 23, 2024 CNSC staff response to MSIFN's outstanding concerns	interest in participating in the EA follow up activities. OPG has been having ongoing discussions with MSIFN regarding the EMEAF plan and associated monitoring, including discussions on requirements for follow up programs under the IAA 2019. The EMEAF Plan notes that OPG commits to working with Indigenous Nations and communities to incorporate Indigenous and Traditional knowledge, where available, in order to further understand the potential impacts of the project and strengthen assessment and decision-making. The EMEAF notes that OPG endeavours to reflect Indigenous and Traditional knowledge into the framework for this EMEAF Plan as well. OPG welcomes all information that can be used to provide insight and continues discussion with Indigenous Nations and communities, including MSIFN, to better integrate Indigenous and Traditional knowledge into the project and ongoing monitoring and follow-up activities to ensure their Rights and interests remain protected.	Follow-Up program, as per the *Canadian Environmental Assessment Act* (CEAA) of 1992, under which the EA conclusions for the DNNP were accepted. CNSC staff confirmed that follow-up programs are updated and revised based on the results of environmental monitoring, updated codes and standards, the identification of new species at risk, and when directed by a Responsible Authority (RA). CNSC staff will ensure the implementation of OPG's EA Follow-Up Programs through the introduction of specific licensing requirements, including licence conditions or inclusion of specific requirements in a Licence Conditions Handbook (LCH). CNSC staff will include an explicit requirement in the LCH that requires OPG to follow through with their commitments with the Nations when updating the EA Follow-Up program. CNSC staff reiterated that they can only require what is required under the relevant legislation. However, CNSC staff expects OPG to ensure that their follow-up monitoring program includes collaboration with MSIFN and other potentially impacted Indigenous Nations and communities and is in line with current best practices and expectations. CNSC staff encourage MSIFN to inform OPG directly regarding their expectations for what should be included in the EA follow-up program and flag any concerns with the CNSC[3]. Through CNSC's long-term engagement Terms of Reference with MSIFN, CNSC is committed to involving MSIFN in the oversight and monitoring of the DNNP during the licensing term should the project proceed[4]. Although this project is not subject to the *Impact assessment Act* (2019), CNSC staff are aware that OPG has committed to collaboratively reviewing the environmental work done in 2009 and determine what needs to be updated to todays	fairness in all of its dealings with Indigenous peoples. The CNSC's expectation does not resolve our concern. On November 20, 2023, Chief LaRocca requested a gap analysis for the DNNP, given the differences in impact assessment regimes. Furthermore, MSIFN has stated that an EA follow up program, completed according to the conditions of the IAA, could address gaps to the EA. MSIFN informed OPG directly on **October 26, 2023**. Furthermore, on November 20, 2023, Chief LaRocca mentioned that MSIFN will look to the regulator to ensure MSIFN's concerns are met. Again, the CNSC's involvement commitment does not meet our concern of ordering a follow up program that follows the principles of the IAA framework. On November 20, 2023, Chief LaRocca shared MSIFN's perspectives, which include ordering a mandatory follow up program that follow the principles of the IAA framework; however, the CNSC has not addressed this concern. OPG has not provided any written commitments regarding a follow-up program, Indigenous Knowledge Study, cumulative effects assessment, or addressing gaps between the 2009 EA vs. current IA approaches. We are	within the CNSC's mandate and regulatory requirements. CNSC staff note the Impact Assessment Act does not apply, as this project has already undergone an Environmental Assessment under the former Canadian Environmental Assessment Act of 1992. Therefore, OPG is not required to undertake the requirements under the Impact Assessment Act. However, CNSC staff acknowledge that MSIFN has outstanding concerns including that their request for the CNSC to order a follow up program that follows the principles of the IAA framework has not been addressed. CNSC staff are committed to working with OPG and MSIFN throughout the life-cycle of the project, should it proceed, to continue to find ways to address the concerns raised. CNSC staff are also committed to taking an adaptive management approach to the DNNP follow up

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					standards. OPG is committing to conduct an environmental monitoring augmentation program to apply an Indigenous knowledge lens and involve interested WTFN in the on-site environmental monitoring. CNSC staff understand that OPG and the WTFNs, including MSIFN, are currently in the scoping phase of this project. CNSC staff remain committed to collaborating with interested WTFN on an Indigenous Knowledge study specific to the DNNP to help gather more specific information and data regarding WTFN Rights and interests that could be potentially impacted by the DNNP and other projects in the treaty territory[5]. The results of these studies can then help to inform an adaptive management approach and EA follow-up monitoring program, which will ensure the DNNP project and related activities would be protective of their Rights and interests. CNSC staff are committed to ensuring that MSIFN's Indigenous Knowledge and perspectives are reflected in the follow-up and monitoring program[6].	four months from the License to Construct hearing, with no written commitments from OPG.	and environmental monitoring with MSIFN. CNSC staff will work collaboratively with MSIFN to ensure OPG fulfils their commitments. MSIFN's view is that this concern has not been addressed.
MSIFN #13	MSIFN raised concerns that MSIFN and other WTFN were never consulted by the Crown or facility operators when decisions were made to build and operate the Pickering and Darlington Nuclear Generating Stations, the Darlington Waste Management Facility, or most other facilities regulated by the CNSC in our treaty lands. MSIFN requested that the CNSC to mandate OPG to obtain MSIFN's consent for the DNNP[4]. This request has frequently been made by	United Nations Declaration on the. Rights of Indigenous Peoples		OPG has been working with MSIFN to better understand their concerns and work to address them to the extent possible. OPG is working towards establishing agreements with MSIFN and other interested WTFN, as well as developing a path forward to address WTFN' requests for additional studies, inclusion in monitoring programs, and WTFN' involvement in follow-up measures.	The CNSC's consultation approach, and Indigenous engagement requirements for proponents as per REGDOC-3.2.2 *Indigenous Engagement*, are designed with the goal of striving to achieve consensus with potentially impacted Indigenous Nations and communities by meaningfully addressing concerns and potential impacts to Rights and interests and bringing forward the views of Indigenous Nations and communities to the Commission, to help inform their decision-making process. The proponent is encouraged to work with potentially impacted Indigenous Nations and communities to develop a specific approach for	The Proponent's response is missing information from its Indigenous Reconciliation Action Plan. The Crown's response does not address MSIFN's request that consent be considered before the construction of the first SMR. This concern was submitted to the CNSC on March 20, 2023, in MSIFN's submission titled "Comment Submission: OPG's Darlington New Nuclear Project (DNNP)." However, MSIFN is committed to assisting the regulator and site operators with advancing projects in	CNSC staff's view is that these concerns have been addressed to the extent possible within the CNSC's mandate and regulatory requirements. However, CNSC staff are aware that MSIFN is of the view that their concern and request for consent has not been addressed by either OPG or the CNSC. CNSC staff are committed to continuing to work with MSIFN and OPG to

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	MSIFN. Given that there is no long-term plan for the management and storage of nuclear waste in Ontario. MSIFN must live with the risk of storing additional radioactive waste in its Treaty Territory because of a self-made energy crisis by the Ontario government. The regulatory process, as it currently stands, does not ensure OPG's compliance with the requirements and standards set forth in UNDRIP or the UNDRIP Act. This includes the crucial principles of free, prior, and informed consent (FPIC) concerning land development and resource extraction, and the Rights of Indigenous peoples to self-determination and to maintain their distinct political, legal, economic, social, and cultural institutions.				striving to achieve consensus and support, as appropriate. Potentially impacted Indigenous Nations or communities that wish to express their views directly to the Commission regarding their process and position on their FPIC in relation to the proposed DNNP License to Construct Application, are encouraged to use the opportunity through their written and/or oral intervention. This will help assist and inform the Commission's decision-making for this matter. Additionally, CNSC is supporting whole-of-government work underway related to the UNDA Action Plan released in 2023. The action plan measure 32 speaks to developing guidance for implementing Free, Prior and Informed Consent for natural resource and energy projects and related decisions, which is being led by Natural Resources Canada. In addition, CNSC staff are actively working on updating guidance and requirements for proponents and licensees with regards to Indigenous engagement through proposed updates and amendments to REGDOC-3.2.2: Indigenous engagement, which include changes to bring the guidance and requirements in line with the principles of UNDA. CNSC staff have been having on-going discussions regarding with MSIFN about their concerns regarding the lack of consultation when the Darlington Nuclear Generating site and waste management facility were originally established and constructed. The CNSC ensures that Indigenous Nations and communities have meaningful opportunities to participate in all aspects of environmental reviews and licensing processes for a given project, to ensure all issues and concerns are considered throughout the full life cycle of regulatory oversight of operating and proposed nuclear facilities. The CNSC is	the right way. Communicated by Chief LaRocca on Nov 20, 2023, to CNSC staff. The Supreme Court of Canada in its recent C-92 Reference (Reference re An Act respecting First Nations, Inuit and Métis children, youth and families, 2024 SCC 5) states that UNDRIP "has been incorporated into the country's positive law by the United Nations Declaration on the Rights of Indigenous Peoples Act, S.C. 2021, c. 14 ("UNDRIP Act"), s. 4(a). This statute recognizes that the Declaration "provides a framework for reconciliation" (preamble); s. 5 of the same statute requires the Government of Canada, in consultation and cooperation with Indigenous peoples, to take "all measures necessary to ensure that the laws of Canada are consistent with the Declaration". The statute's preamble expressly provides that the implementation of the Declaration in Canada "must include concrete measures to address injustices" facing, among others, Indigenous youth and children." Therefore, UNDRIP is - now – incorporated in Canada's positive law, and as a result the CNSC is obligated to act now to incorporate UNDRIP and "consent". The Supreme Court of Canada provides the guidance that the CNSC requires. It is the CNSC's duty to act on the Supreme Court's legal	address their concerns and striving to achieve a consensus on the DNNP issues and concerns raised. CNSC staff note that these efforts will continue to be monitored and assessed as per REG DOC 3.2.2 and additional information about the status of this will be provided in advance of the Licence to Construct Part-2 hearing. MSIFN's view is that this concern has not been addressed.

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					committed to working with MSIFN on continuing to address any ongoing concerns they have with regards to the nuclear sector activities in MSIFN territory. Through the Terms of Reference for long-term engagement between MSIFN and CNSC, CNSC is dedicated to continued consultation and engagement to ensure that MSIFN's territory, community and environment are protected through collaborative environmental monitoring, enhanced communication and information sharing. CNSC staff will continue to monitor OPG's Indigenous engagement activities related to the DNNP, should the project proceed, to ensure that OPG engages MSIFN on key topics of interest and is responsive to questions or concerns raised.	determination that UNDRIP is now the law. In particular, the CNSC is required by the incorporation of UNDRIP in Canada's positive law to "take effective measures to ensure that no storage or disposal of hazardous materials shall take place in the lands or territories of indigenous peoples without their free, prior and informed consent." (UNDRIP Article 9). OPG has not provided any written commitments regarding a follow-up program, Indigenous Knowledge Study, cumulative effects assessment, or addressing gaps between the 2009 EA vs. current IA approaches. We are four months from the License to Construct hearing, with no written commitments from OPG.	
MSIFN #14	MSIFN raised concerns that they did not receive participant funding from the Canadian Environmental Assessment Agency (CEAA) to participate in the environmental assessment and related consultation activities. Additionally, consultation with MSIFN appears to have been limited to the distribution of letters and documents. MSIFN raised concerns about the change of EA and consultation requirements when considering CEAA 1992 to IAA 2019 that have a direct impact on the MSIFN	Indigenous Consultation and engagement		OPG has been conducting ongoing engagement with MSIFN. In OPG's Indigenous Engagement Report, OPG indicates that they conducted early engagement on the technology selection process and on the EIS Review prior to its submission to the CNSC. Based on a request from the WTFN, OPG is in discussions with representatives of the WTFN to develop a pathway forward that includes a scoping exercise in 2024 to begin to develop a plan to undertake an Indigenous Knowledge Study, which could include or lead to a cumulative effects study, an updated RIA and opportunities to identify and address the options for extended engagement with regards to environmental protection[5].	CNSC staff note that starting in 2007 and throughout the EA process for the DNNP, both the CNSC and the Canadian Environmental Assessment Agency of Canada (CEAA) consulted with potentially impacted or interested Indigenous Nations and communities, including the WTFN. Consultation efforts during this process included letters, emails, telephone calls, and meetings at key points, including an invitation to review and provide comments on OPG's EA and licence to prepare site application in 2009, as well as opportunities to apply for funding through CEAA's Participant Funding Program. CNSC and CEAA staff provided many opportunities for the Indigenous Nations and communities to submit comments on the project and discuss potential concerns, including any potential impact on Rights. CNSC staff encouraged Indigenous Nations and communities, including all WTFN, to	MSIFN questions whether, as the responsible authority, were the above-mentioned engagement activities made with the view of the CNSC's best efforts (e.g., sending letters, emails, telephone calls, and meetings at key points) while engaging MSIFN and other WTFNs? The response from the CNSC raises the question of how the regulator addressed comments from MSIFN.	CNSC staff's view is that these concerns have been addressed to the extent possible within the CNSC's mandate and regulatory requirements. CNSC staff note the Impact Assessment Act does not apply, as this project has already undergone an Environmental Assessment under the former Canadian Environmental Assessment Act of 1992. Therefore, OPG is not required to

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	community and pre-existing treaty Rights of WTFNs [4]. This includes: - Follow-up programs that include and go beyond the 2009 environmental assessment follow-up program, reflecting the current IAA. - Assess the potential impacts linked to the BWRX-300 reactor technology through current federal IAA requirements, given that the chosen technology is fundamentally different from the specific reactor technologies assessed and bounded by the plant parameter envelope, as outlined in the JRP Environmental Assessment Report, all of which were predicated on CEAA 1992. - Overlook gaps in the JRP EA and to establish safeguards in line with the IAA framework, given that the JRP EA did not include detailed inputs from impacted First			OPG has proposed that an environment sub-committee be formed to design the above-mentioned Environmental Monitoring Augmentation Plan as well as complete an assessment of the standards of 2009 and today, to understand where we can work together to meet and exceed current standards.	submit information to the Joint Review Panel (JRP) and to participate in the public hearings. During the EA process, no project specific concerns or impacts to Rights were identified by the Indigenous Nations and communities. All potentially impacted or interested Indigenous Nations and communities, including MSIFN were provided with the opportunity to apply for funding to support participation in the EA. CNSC staff had multiple phone calls with MSIFN leadership and representatives and discussed the funding opportunities available. When the funding deadline passed, CNSC staff followed up and talked to MSIFN representatives offering an extension, however MSIFN did not end up applying for funding at the time. Similarly, although opportunities were provided to MSIFN to comment on the project, the EA and LTPS application, no comments were received from MSIFN at the time. In the Government of Canada's response to the JRP EA report, the legal duty to consult was acknowledged and it indicated that consultation with Indigenous Nations and communities was integrated into the EA and regulatory review process. CNSC staff note that the Commission's Record of Decision Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment (Paragraph 219) indicates "The task for the Commission in this determination is not to reassess the EA, or the adequacy of the EA, and this includes Indigenous consultation. When the EA was conducted, conclusions were drawn on the assessment and a licence issued on the basis that the duty to consult had been adequately discharged. It is not the task of the Commission to reassess this conclusion."		undertake the requirements under the Impact Assessment Act. However, CNSC staff acknowledge that MSIFN has outstanding concerns. CNSC staff are committed to working with OPG and MSIFN throughout the life-cycle of the project, should it proceed, to continue to find ways to address the concerns raised. CNSC staff are also committed to continuing to improve the approach to consultation and engagement based on feedback from MSIFN and other Indigenous Nations and communities.

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	Nations (including Indigenous Rights and knowledge) and related health, socio-economic, climate change, avoidance, mitigation, and compensation considerations.				In relation to the applicability of the Impact Assessment Act, 2019, CNSC staff note that the DNNP EA was conducted and approved under the Canadian Environmental Assessment Act of 1992, which was the governing legislation at the time. The Impact Assessment Act, 2019 does not apply to the DNNP as a decision has already been rendered by the JRP and the Government of Canada on this proposed project under the former Act. CNSC staff have ensured that MSIFN and other WTFNs have had opportunities to be consulted and engaged at each phase of the regulatory process for the DNNP, including the renewal of the licence to prepare site, the applicability of the EA decision and the licence to Construct application. CNSC staff have committed to considering current standards and best practices when conducting consultation and engagement for the current phase of the DNNP regulatory review process. To date, this has included: - Providing early notification in May 2022 about the expected regulatory process for the applicability of the EA to OPG's selected technology and the Licence to Construct application for the DNNP and offering opportunities for early engagement with the identified Indigenous Nation and community to discuss the DNNP and how each Indigenous Nation and community would like to be consulted and engaged moving forward and what would be meaningful for them. - Having a comment period on OPG's EIS review and PPE documents and specifically requesting feedback from the identified Indigenous Nations and		

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					communities to consider their knowledge and perspectives in our technical review and work to address concerns to extent possible[7]. On August 29, 2023, CNSC staff responded to some of the concerns and themes raised by MSIFN during this comment period and offered to meet to discuss the concerns further. CNSC staff considered the comments and feedback in their technical review, provided the comments to OPG and have encouraged OPG to have discussions regarding these comments with MSIFN directly. - Offering to conduct collaborative RIAs with potentially impacted WTFN, at this stage of the process in response to recent concerns raised by CLFN, Hiawatha FN and MSIFN about the potential for the DNNP to impact their Rights and that the Williams Treaties Settlement Agreement was signed after the EA was conducted. - Providing multiple stages of participant funding to support involvement in the DNNP regulatory process. CNSC staff will continue to consider and implement best practices for consultation and engagement for the DNNP regulatory process and the ongoing monitoring, follow up and oversight, should the DNNP proceed. CNSC staff expect OPG to consider best practice and current standards in their follow up monitoring program as well as any Indigenous Knowledge study or other relevant studies. CNSC staff note that as per the Commission's Record of Decision – Ontario Power Generation – Applicability of the BWRX 300 Reactor to the		

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					DNNP Environmental Assessment, issued 22 April 2024, the Commission expects OPG to: • work collaboratively with interested Williams Treaties First Nations to scope out the extent, timing and content of the following study and assessment: ○ Rights Impact Assessment ○ Indigenous Knowledge study • work collaboratively with Williams Treaties First Nations to scope out the extent, timing and content of an updated Cumulative Impacts Assessment • consider best practices and standards when scoping and undertaking the above-noted study and assessments		
MSIFN #15	MSIFN raised concern that the BWRX-300 reactor technology is fundamentally different from the specific reactor technologies assessed and bounded by the plant parameter envelope, as outlined in the JRP Environmental Assessment Report (JRP EA) As per the Joint Review Panel Recommendation #1[1], the selection of a reactor technology that is not one of the four designs considered in the EA required OPG to	Regulatory requirements		OPG's EMEAF Plan notes that OPG commits to working with Indigenous Nations and communities to incorporate Indigenous and Traditional knowledge, where available, in order to further understand the potential impacts of the project and strengthen assessment and decision-making. OPG endeavours to apply Indigenous and Traditional knowledge into the framework for this EMEAF Plan as well. OPG welcomes all information that can be used to provide insight and continues discussion with Indigenous Nations and communities to better integrate Indigenous and Traditional knowledge into the project.	The DNNP EA was conducted and approved under the Canadian Environmental Assessment Act of 1992, which was the governing legislation at the time. The Impact Assessment Act does not apply to the DNNP as a decision has already been rendered by the JRP and the Federal Government on this proposed project under the former Act; the environmental assessment decision remains applicable. Based on CNSC staff's review of the EA and the PPE review, CNSC staff find that OPG's selected technology is within the bound of the EA considering the recommendations, mitigation measures and follow up program. The CNSC's Commission also determined that the BWRX-300 is not fundamentally different from	OPG has not provided any written commitments regarding a follow-up program, Indigenous Knowledge Study, cumulative effects assessment, or addressing gaps between the 2009 EA vs. current IA approaches. We are four months from the License to Construct hearing, with no written commitments from OPG.	CNSC staff are of the view that the concern regarding whether the BWRX-300 technology is fundamentally different has been addressed as per the response column, as well as by the Commission decision on the January 2024 hearing. CNSC staff note the Impact Assessment Act does not apply, as this project has already undergone an

[1] The JRP Recommendation #1 reads as follows "The Panel understands that prior to construction, the Canadian Nuclear Safety Commission will determine whether this environmental assessment is applicable to the reactor technology selected by the Government of Ontario for the Project. Nevertheless, if the selected reactor technology is fundamentally different from the specific reactor technologies bounded by the Plant Parameter Envelope, the Panel recommends that a new environmental assessment be conducted."

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	conduct a review to confirm the continued applicability of the assumptions and conclusions of the EA. Therefore, MSIFN requests that OPG and interested WTFN conduct a gap analysis between the JRP EA and the federal *Impact Assessment Act* (IAA) requirements[3].			OPG is committing to enhance their environmental protection and follow-up monitoring program, based on the information collected through the Indigenous knowledge study that OPG has committed to supporting. OPG's goal is to build a comfort level between OPG and the communities that the DNNP is protective of the environment and their Rights.	the technologies assessed in the EA and a new EA is not required. CNSC staff have committed to considering current standards and best practices when conducting consultation and engagement for the DNNP. This includes on the Licence to Construct application and the ongoing monitoring, follow up and oversight, should the DNNP proceed. CNSC staff expect OPG to consider best practice and current standards in their follow up monitoring program as well as any Indigenous Knowledge study or other relevant studies.		Environmental Assessment under the former Canadian Environmental Assessment Act of 1992. Therefore, OPG is not required to undertake the requirements under the Impact Assessment Act. MSIFN's view is that this concern has not been addressed.
MSIFN #16	MSIFN raised concerns that the RIA process should have occurred in conjunction with the original 2009 OPG Environmental Impact Statement. They and other interested WTFNs have not been part of designing the proposed RIA and have far too little time to coordinate the intense investigations required to provide meaningful inputs to the RIA as part of the current regulatory process for the DNNP. MSIFN wishes to make it clear that the request is not appropriate and should have come years earlier with time to collaboratively design a RIA process with the timeframe and resources required for such a significant undertaking. MSIFN notes that this is the first federal Crown	RIA Process	January 11, 2024 CNSC response email January 11, 2024 MSIFN letter regarding RIA January 24, 2024 CNSC response letter	OPG has been engaging with MSIFN to better understand concerns about the DNNP specific impacts on MSIFN's[2] Indigenous and/or Treaty Rights, through regular and ongoing meetings. Based on a request from the WTFN, OPG is in discussions with representatives of the WTFN to develop a pathway forward that includes a scoping exercise in 2024 to begin to develop a plan to undertake an Indigenous Knowledge Study, which could include or lead to a cumulative effects study[3], an updated RIA and opportunities to identify and address the options for extended engagement with regards to environmental protection.	CNSC staff acknowledge MSIFN's view that the RIA should have been conducted during the Environmental Assessment (EA) for the DNNP, which was completed in 2011. Potential impacts on Rights were considered during the EA by the CNSC, the Canadian Environmental Assessment Agency of Canada and the Joint Review Panel[4]. At the time of the EA and JRP hearings, no concerns about potential impacts on Rights were raised by MSIFN and other WTFN, and the JRP's assessment based on the EA and all facts and evidence brought forward during the hearing process was that they did not expect the DNNP to result in significant adverse effects on current use of land and resources for traditional purposes by "Aboriginal" persons as per section 6.4 of the JRP environmental assessment report for the DNNP. CNSC staff acknowledge that consultation and engagement expectations and requirements have changed since the EA, including the signing of the Williams Treaties Settlement Agreement in 2018, which recognized the pre-existing Treaty Rights of the WTFN. In addition, as part of the consultation process for the applicability of the EA to OPG's chosen technology and the Licence to Construct application for the DNNP, MSIFN	Please note OPG has not provided written commitment to supporting MSIFN or other interested WTFNs to undertake an Indigenous Knowledge Study (see below). The scope of such a study should include the full scope of the DNNP projects, inclusive of the recently announced Low & Intermediate Waste Facility – which under Canada's Integrated Strategy for Radioactive Waste requires First Nation consent together with early and comprehensive consultation. MSIFN acknowledges that the CNSC remains committed to working collaboratively with MSIFN on this assessment. However, please acknowledge that WTFNs have not been part of designing the RIA, which is a new best practice across the Federal Government.	CNSC staff have offered and remain open to collaborating with MSIFN on completing the RIA for the DNNP Licence to Construct with the goal of supporting MSIFN in clearly articulating its concerns regarding potential impacts to its Rights and interests, measures to address those concerns and identify any existing information or data gaps. CNSC staff will continue to have ongoing discussions about the DNNP Licence to Construct specific RIA with MSIFN, the full assessment and

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	determination for impacts on any project involving MSIFN and WTFN Rights since the 2018 Settlement Agreement. A Commission's decision, based on the amount of traditional knowledge collected during a RIA, can easily jeopardize MSIFN and WTFN Rights if not properly conducted. MSIFN requested that the CNSC ensure OPG provides MSIFN, CLFN and HFN with information that has been requested to inform the assessment of impacts on Michi Saagig Rights				and other WTFN have now more recently raised specific concerns regarding the potential for the construction and operation of the DNNP to lead to new impacts on their Rights and interests. As a result, CNSC staff are offering to collaborate on RIAs specifically in relation to the DNNP Licence to Construct application , with potentially impacted WTFN, including MSIFN, at this stage of the process to gather available information, analyze potential impacts to Rights based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts in order to make a collaborative recommendation to the Commission about potential impacts on Rights from the DNNP. This proposed approach is part of the CNSC's commitment to consider current best practices as part of the DNNP regulatory and consultation processes. CNSC staff acknowledge MSIFN's concern that the WTFN's were not involved in designing the RIA framework and their concerns regarding the RIA time constraints limiting the amount of traditional knowledge that could be collected during the short timeframe. The RIA framework is meant to be flexible and was presented as a way to start discussions on the approach to assessing the specific concerns MSIFN has recently raised regarding the DNNP's potential impacts on MSIFN Rights and interests. CNSC staff have continued to raise and discuss the approach to conducting an RIA, the expected timelines and how MSIFN would like to collaborate on the process for the DNNP. CNSC staff remain committed to working collaboratively with MSIFN on this assessment. In addition, CNSC staff are fully committed to working with MSIFN and other WTFN on supporting an Indigenous Knowledge and Land Use study specific to the DNNP to help gather more specific information		conclusions will be submitted to the record prior to the Licence to Construct Part-2 hearing. The goal for the RIA will be to include information, perspectives and recommendations from both CNSC staff's and MSIFN''s perspectives.

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					and data regarding WTFN Rights and interests that could be potentially impacted by the DNNP and other projects in the treaty territory. As discussed, this approach would ensure that in the current RIA, both CNSC staff and MISFN would be able to summarize the specific concerns regarding any existing gaps or limitations in knowledge and data about Rights practiced, with the recommendation to move forward together, with OPG, to complete these studies. The results of these studies can then help to inform an adaptive management approach and EA follow-up monitoring program, which will ensure the DNNP project and related activities would be protective of Rights and interests, as well as potential updates to the current RIA for the Licence to Construct application for the first DNNP unit as new information is provided by OPG and the Nations to help support the regulatory process and decision-making on future phases of the DNNP including any future licence to operate application or additional Licence to Construct application s for other DNNP units, as appropriate.		
MSIFN #17	Upon review of the "*CNSC staff update on Consultation and Engagement with Indigenous Nations and communities on the Applicability of the Darlington New Nuclear Project (DNNP) Environmental Assessment to OPG's Chosen Technology* (EDOCS #7212032)", MSIFN expressed disappointment and concern that the list of commitments raised by Michi Saagiig Nations have not been addressed. The concerns and requests outlined in MSIFN's written intervention to the Commission, as well as in the	Engagement and Consultation	February 16, 2024 MSIFN letter February 16, 2024 CNSC response email March 4, 2024 MSIFN letter	Not Applicable	CNSC staff and OPG were directed by the Commission on the final day of the DNNP hearing (January 25th) by the Commission to provide additional information regarding engagement activities leading up to the January Commission hearing that covered the time period from when CNSC staff submitted the Commission Member Document for the DNNP hearing (September 2013) up until the hearing in January 2024. The Commission requested this information from CNSC staff and OPG to be submitted to them as soon as possible. The scope of the request did not include reiterating or summarizing the requests and submissions from any interveners including MSIFN as that information was already provided on the record to the Commission. For		CNSC staff's view is that this concern has been responded to and will be addressed through ongoing collaboration on relevant documents (i.e offering opportunities to collaborate on the RIA, issues tracking table, DNNP Consultation Report)

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	joint oral intervention presented by MSIFN, Curve Lake, and Hiawatha First Nations on January 23rd, have not been acknowledged or documented in this CNSC staff update. The staff update and the summary of consultation and engagement fail to include the list of commitments sought from the Commission and neglect to articulate any impacts on Treaty Rights. The list of commitments and requests made by MSIFN, Curve Lake, and Hiawatha First Nations remains unaddressed by CNSC staff and must be addressed by the Commission.				transparency CNSC staff wanted to ensure that MSIFN and other Nations had the information we were requested to submit to the Commission, and shared a copy of the report with MSIFN and other interested Indigenous Nations and Communities . As committed to with MSIFN, CNSC will be sharing CNSC staff documentation and reports related to MSIFN for the DNNP Licence to Construct application for review and input including CNSC's CMD section related to MSIFN, MSIFN specific issues and concerns tables, and the MSIFN specific RIA summary report. CNSC staff are currently working on updating those documents to reflect MSIFN's submissions to the Commission for the January DNNP hearing and will be providing those to MSIFN for review and input.		
MSIFN #18	MSIFN has raised concerns about the DNNP contributing to cumulative effects from the Pickering and Darlington Sites on their Treaty Rights and on the environment. MSIFN has requested CNSC and OPG to work collaboratively with MSIFN, CLFN and HFN to develop and undertake a Cumulative Effects Assessment	Cumulative Effects		Through recent discussions with the MSIFN and the other Mississauga Rightsholders, OPG is working with WTFN to develop a pathway in 2024 that will include a scoping exercise to develop an Indigenous Knowledge Study, which would include or lead to a cumulative effects study, a RIA and opportunities to identify and address the options for extended environmental engagement which would look at standards from the 2009 EA and the standards of today with actions to address the differences. OPG has also started discussions on augmenting its existing environmental monitoring plans which would incorporate an Indigenous Knowledge worldview to be applied, e.g., site restoration.	The assessment of cumulative environmental effects in the EIS focused on past, present, and future projects within the surrounding area that had a potential to act cumulatively with the DNNP. A total of 34 other projects and activities within the study area was selected for consideration of their potential to contribute to cumulative environmental effects. All were screened to identify those expected to have effects similar to, and likely to overlap geographically and temporally with, the residual effects of the Project. Project-related residual adverse effects were identified as likely within the following four environmental components: Aquatic Environment, Terrestrial Environment, Land Use (visual landscape), and Socio-Economic Environment. Each Project-related residual adverse effect was assessed in combination with the overlapping	MSIFN and other interested WTFNs have yet to receive written commitments from OPG with regard to an Indigenous Knowledge Study or a parallel cumulative effects study, or a gap assessment and actions regarding the 2009 EA and the standards of today. The absence of such a commitment only four months away from the CNSC License to Construct Hearing indicates that MSIFN and interested WTFNs are unlikely to receive such commitments from OPG.	CNSC staff's view is that the cumulative effects concern has been and will continue to be addressed by OPG and CNSC staff, as described in the response column. CNSC staff are committed to working with MSIFN throughout the lifecycle of the project, should it proceed, to address their concerns and collaborate on assessing and addressing cumulative effects, as appropriate.

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					effects of other projects and activities advanced through the screening step. In all cases, it was determined that no further mitigation measures (outside of in-design mitigation measures) were considered to be necessary to address potential cumulative effects. The EIS review described the updated status of the projects identified in the EA. The Review found no new adverse effects from the BWRX-300 deployment on these receptors or other environmental components that require further consideration in the cumulative effects assessment. Due mainly to a smaller footprint of the BWRX-300 SMR (when compared to DNNP), equal or smaller residual cumulative effects with other on-site and off-site projects have potential to occur. Furthermore, it is stated that the BWRX-300 does not include cooling towers and, therefore, the potential visual and related community cumulative effects do not need to be carried forward to determine their significance. CNSC staff look at the cumulative effects to the environment as part of ongoing reviews. This includes environmental risk assessments. These assessments are done every five years and would provide staff with an indication as to whether there is a change in the risk profile for the environment around the facility. Further, information on environmental monitoring at the facility as well as from regional monitoring and IEMP also inform staff's ongoing review related to cumulative effects. The RIA process will consider how cumulative impacts from all previous impacts and development in the territory could interact with the currently proposed project, as well their perspectives on how they would prefer to practice their Rights and interests. This context as provided by the Indigenous Nation and		

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					community, helps to inform the CNSC with regards to the current conditions of the territory including the current capacity of their territory to withstand additional new impacts as the result of the proposed project and how project specific impacts could interact with existing conditions and cumulative impacts in the territory. This is taken into consideration in the RIA as part of the magnitude of project specific impacts, and directly informs the assessment of the potential severity of project specific impacts as well as potential options for addressing, mitigating or accommodating those project specific impacts so as they do not contribute to any existing impacts on the Nation's territory and Rights. CNSC staff note that in the Commission's Record of Decision – Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment (Paragraph 216) the Commission directs CNSC staff to support the collaborative work on multiple studies and assessments, include a cumulative impacts assessment. CNSC staff are also open to supporting the scoping and implementation of a cumulative effects study, in collaboration with Mississaugas of Scugog Island First Nation, other interested WTFN and OPG, to help inform the DNNP environmental monitoring and follow up program and future RIAs as appropriate.		
MSIFN #19	MSIFN indicated that the evaluation of alternative on-site locations for the used fuel dry storage facility is considered in the framework of the bounding site development, so long as OPG does not exceed its used fuel storage and processing	Waste Management		OPG has been discussing and engaging with the MSIFN to better understand, respond to and work to addressing their concerns related to waste management, including providing support for MSIFN to conduct a Benchmark review of International Best Practices for the management and interim storage of used nuclear fuel with current OPG practices. MSIFN is in preliminary conversations with	For this application CNSC has not received an application for waste management facility related to the DNNP. A DNNP Solid Radioactive Waste Management Strategy has been submitted to CNSC staff for review. The Strategy document describes some of the lifecycle considerations for waste management, including interim storage. These considerations include:		The solid waste management strategy outlines OPG's waste management program, including the requirements that it needs to be complied with. The data received by CNSC for

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	specifications. MSIFN acknowledges that higher solid waste volumetric activity will be generated during the BWRX-300 operation. Therefore, OPG may exceed the specifications in the framework of the bounding site. Considering this, this issue should be further evaluated and mitigated through meaningful collaboration between WTFN and OPG.			OPG regarding a term of reference for advancing this review	• spent fuel casks will be transferred to an interim storage facility within the Darlington site. • The interim storage facility should be as close as possible to the DNNP. • The location and design of the interim storage facility depends on several considerations such as ground water table level, seismic efficiency, foundation and soil profile, security, as well as other environmental conditions. The location and design of the facility will ensure that it does not have a substantial affect on the environment, as well as ensuring that the facility is suited to withstand all conditions on site. • The facility must also be designed to ensure sub-criticality of the used fuel is maintained and that radiation shielding is provided to ensure dose limits to both the workers and the public are maintained ALARA (As Low As Reasonably Achievable). Currently, waste generated at OPG nuclear generating sites is managed at waste management facilities that are licenced under separate CNSC licences. Any changes to the licensing basis of one of those licences, for example increased capacity, would require a licence amendment that would be subject to a CNSC licensing process. CNSC staff will ensure that MSIFN is kept informed of any proposed amendments and has opportunities to meaningfully participate in the regulatory process.		radioactive wastes, for purposes of the LTC, is within the scenario described in the Environmental Assessment. The following information is from the Commission's Record of Decision (pg. 34, paragraph 107.): "Based on the information on the record, the Commission concludes that the EA remains bounding, when considering the activity by isotope of solid radioactive waste being outside the bounds of the original PPE. The Commission finds that: • the total volume of solid waste from the BWRX-300 reactor is less than that of the reactor designs specifically considered in the EA • the total volumetric activity for the BWRX-300 reactor technology

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					CNSC staff also encourage OPG to conduct early engagement and collaboration with MSIFN, and other interested WTFN's on this topic.		is less than the EA bounding scenario • the radionuclide makeup of solid waste from the BWRX 300 reactor is similar to other thermal reactor solid waste • OPG intends to account for the differences in radionuclide proportions for the BWRX-300 by adapting its approach to waste management" The CNSC has not received an application for waste management facility related to the DNNP. If this application is received, it will be subject to the CNSC's licensing process and consultation with Indigenous Nations and communities, and will be assessed against the bounding scenario in the EA. CNSC staff are of the view that the concerns regarding OPG's waste management have been addressed within the CNSC's mandate and regulatory requirements

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							for a Licence to Construct application. CNSC staff are committed to ongoing discussions and consultation regarding OPG's nuclear waste management program at future licensing stages, should the project proceed.
MSIFN #20	MSIFN raised concerns about the changing project description of the DNNP. MSIFN is concerned that OPG only recently informed them about their intention to apply to construct a low & intermediate level (LILW) waste facility at the Darlington site. MSIFN indicated that the DNNP represents many unknowns for the WTFN (WTFNs) as it is unclear what is being considered for the Licence to Construct application, and the intended addition of the nuclear waste facility on site by OPG is interpreted as major changes to the DNNP project description. MSIFN noted that it is difficult to understand what the potential impacts on the environment and their Rights are, when it is not clear what is				The decision that is in front of the Commission for the Hearing, is what is described in OPG's license application, which is solely for the construction of 1 BWRX-300 and does not include construction of a new radioactive waste facility. The project description has not changed. The CNSC has not received an application for waste management facility related to the DNNP. If this application is received, it will be subject to the CNSC's licensing process and consultation with Indigenous Nations and communities. While the principles in the Integrated Strategy for Radioactive Waste are focused on disposal projects, the CNSC is committed to consultation and engagement with MSIFN regarding potential projects involving interim waste storage on the DNNP site. CNSC staff are committed to working with MSIFN and OPG to ensure there is clarity with regards to the scope of the Licence to Construct, in advance of the Commission hearing.	The addition of the LILW waste facility will create additional project impacts, additional cumulative effects, restrict the lands available for ecological offsetting – to name a few of the impacts. It is far too late to engage impacted rights-holding First Nations when decisions have already been made by OPG and the CNSC. Contrary to CNSC staff's view that this issue can be addressed by "future" discussions, this issue needed to be addressed before any decisions were made, and this is clear in Canada's "Integrated Strategy for Radioactive Waste", which CNSC staff should fully understand. Furthermore, OPG and the CNSC are ignoring basic implementing principles of Canada's "Integrated Strategy for Radioactive Waste", particularly Implementing Principle 1 which was completely disregarded by OPG and the CNSC prior to the decision to site the facility at the DNNP site. There have been no discussions with MSIFN or other First Nations about Principle	CNSC staff are of the view that this issue will be addressed through future discussions between CNSC staff, OPG and MSIFN. MSIFN is of the view that both OPG and the CNSC have ignored Canada's "Integrated Strategy for Radioactive Waste" and its four principles, including Principle 1, which was completely disregarded by OPG and the CNSC prior to the decision to site the facility at the DNNP site: Principle 1 - Consent of the local communities and Indigenous peoples in whose territory future facilities will be

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	in scope of the decision at the licence to construct hearing.					2, and there have been no discussions with MSIFN or other First Nations around land stewardship – including ecological stewardship and Indigenous Knowledge – around Principle 3. Finally, OPG and the CNSC's objectives for Principle 4 have not in any way been balanced with Canada's commitment to Reconciliation with Indigenous peoples. Implementing Principle 1: Consent of the local communities and Indigenous peoples in whose territory future facilities will be planned must be obtained: "Indigenous communities in siting areas must have early and meaningful engagement and ongoing involvement in all phases of any waste disposal project, regardless of size, through capacity building among Indigenous peoples, information sharing and collaboration. In addition, laws, regulatory processes and Indigenous consultation protocols, developed and implemented in areas where future facilities will be planned, should be respected. Implementing Principle 2: Design of facilities should prioritize the protection of water: "Protection of water is paramount, and therefore, any disposal facilities must meet the highest standards of environmental and water protection." Implementing Principle 3: Long-term caretaking should be established for disposal facilities: "Indigenous communities with nuclear waste facilities should be part of	planned must be obtained. MSIFN's view is that this concern has not been addressed – both OPG and the CNSC have failed to adhere to the four principles of Canada's "Integrated Strategy for Radioactive Waste".

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						conversations around land stewardship. This is consistent with expectations on waste generators and waste owners in the Policy to work in partnership with Indigenous peoples to gain a greater understanding of their Indigenous Knowledge and advice with regards to radioactive waste management and decommissioning projects." Implementing Principle 4: We need to take action now and not defer to future generations: "This urgency to take actions must be appropriately balanced with Canada's commitment to Reconciliation with Indigenous peoples."	

A.2 Issues Tracking Table for Curve Lake First Nation (CLFN) with respect to the Darlington New Nuclear Project (DNNP)

Note – CNSC staff shared this table with CLFN for their review on February 9, 2024. On May 17th, CNSC staff shared an updated version of this table. On May 31, 2024, CLFN reviewed and provided edits on the table and discussions were had on the comments at a meeting on June 4th. CLFN reviewed and provided additional comments on the table on June 17, 2024

ID #	Concern or issue	Theme	Relevant Correspondence (see Appendix B for details)	OPG Response	CNSC Response	Status of Issue or Concern
CLFN #1	CLFN has raised concerns about the process for assessing impacts to Rights, outlined in the CNSC's RIA (RIA) Framework. CLFN is concerned about the CNSC's definition of current baseline conditions and cumulative effects. CLFN also fundamentally disagrees with assigning a severity to impacts on Rights. CLFN notes that indicating severity diminishes their Rights. CLFN reiterates that any potential impact on the environment, regardless of mitigation measures, will impact their Rights.	Impacts to Rights and RIA process	July 27, 2023 CNSC email re RIA January 5, 2024 CNSC email	OPG is in discussions with representatives of the WTFN to develop a pathway forward that includes a scoping exercise in Q1 2024 to begin to develop a plan to undertake an Indigenous Knowledge Study with interested WTFN including CLFN, which could include or lead to a cumulative effects study, a RIA (which is being conducted by the CNSC) and opportunities to identify and address the options for extended engagement with regards to environmental protection. In OPG's Environmental Monitoring and EA Follow up (EMEAF) Plan, OPG notes that they endeavor to continue to work with Indigenous Nations and communities to appropriately identify the Rights impacted by the Project and to achieve feasible mitigation measures and/or accommodation.	The baseline being considered in an RIA is defined as: the current environmental conditions, present-day exercise of Rights by the Indigenous Nation or community, and existing activities that have affected or could affect the conditions that support or limit the Indigenous Nation or community's meaningful exercise of Rights. The baseline for an RIA should consider the conditions necessary to allow a community to continue to exercise its Rights and how historical and current cumulative effects may already impact those conditions, or how future foreseeable projects may have an impact (i.e. Territorial capacity). This can include additional context such as the Nation's perspectives on the importance, value, uniqueness of an area as well as territorial capacity – which refers to the ability of the Indigenous Nation or community to exercise their Rights in their preferred manner. An RIA should also consider the historical and future context in which Rights are practiced when evaluating the magnitude of potential project impacts relative to the established baseline. This is approach is based on best practices and methodology for RIAs as established by the Impact Assessment Agency of Canada and the CNSC in collaboration with Indigenous Nations and communities and experts in RIA. The RIA framework uses a methodological approach to assessing impacts on Rights, with the goal of coming to a mutual understanding of the severity of any identified potential impacts on potential or established Rights and interests, as a result of a proposed project, as well as to identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts as a result of the proposed project or activity. CNSC staff acknowledge that CLFN often takes a more holistic approach, conceptualizing cumulative impacts on a spiritual, cultural,	CNSC staff's view is that the concerns around impacts to Treaty Rights will continue to be discussed and addressed through the collaborative RIA process. The full assessment and conclusions will be submitted to the Commission prior to the Licence to Construct Part-2 hearing. The RIA will include information, perspectives and recommendations from both CNSC staff's and CLFN's perspectives and positions.

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					timescale (a different baseline, a bunch longer time horizon) and geographic (watershed and Treaty Territory) level. The RIA will include information about CLFN's concerns about the process and perspectives on their Rights and interests to ensure that the Commission receives fulsome information from both CNSC staff's and CLFN's perspectives with regards to the project's potential impacts on their Rights and interests and how the concerns can be addressed.	
CLFN #2	CLFN is concerned that there remain significant gaps in the ability of CNSC, OPG and CLFN to fully identify, understand and comprehensively address potential impacts to Inherent, Aboriginal and Treaty Rights by the DNNP. CLFN requests that CNSC and OPG evaluate opportunities for CLFN be able to gather the requisite information for a complete understanding of the potential and real impacts to the inherent, Aboriginal and Treaty Rights of CLFN. At a minimum, this could occur through the completion of a RIA that is informed by a territorial Indigenous Knowledge Study, a comprehensive cumulative impact assessment, and Rights-based requirements, needs and improvements, including Rights informed approaches to mitigations, compensations, and restorations.	Impacts to Rights	July 27, 2023 CNSC email re RIA framework	OPG is in discussions with representatives of the WTFN to develop a pathway forward that includes a scoping exercise in Q1 2024 to begin to develop a plan to undertake an Indigenous Knowledge Study with interested WTFN including CLFN, which could include or lead to a cumulative effects study, a RIA (which is being conducted by the CNSC) and opportunities to identify and address the options for extended engagement with regards to environmental protection. OPG has made and is committed to continuing to make updates to their environmental protection program and EA follow-up monitoring program, as additional Indigenous Knowledge is shared.	CNSC staff have acknowledge CLFN's concerns regarding the gaps in information that limit the ability for all parties to fully identify and understand potential impacts to Rights. CNSC staff and CLFN have had many discussions regarding the approach to the RIA for the DNNP Licence to Construct to ensure that the CNSC is able to better understand and assess these concerns based on the information available at this time. The goal of the RIA will be to gather available information, analyze potential impacts to Rights based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts in order to make a collaborative recommendation to the Commission about potential impacts on Rights from the DNNP. The report will include information about CLFN's concerns that have been identified and views regarding gaps in information, such as Indigenous Knowledge and land/water use data. CNSC staff have been offering to support an Indigenous Knowledge study with CLFN and other WTFN for many years and it has been in the CLFN-CNSC staff ToR for long-term engagement workplan since 2021. CLFN acknowledges that due to capacity constraints, despite best efforts from CLFN and funding opportunities made available by the CNSC, a plan for an Indigenous Knowledge study has not yet been initiated. CNSC staff remain committed to supporting an Indigenous Knowledge study, while respecting CLFN's priorities, capacity	CNSC staff's view is that the concerns around impacts to Treaty Rights will continue to be discussed and addressed through the RIA process. The full assessment and conclusions will be submitted to the Commission prior to the Licence to Construct Part-2 hearing. The RIA will include information, perspectives and recommendations from both CNSC staff's and CLFN's perspectives and positions.

ID #	Concern or issue	Theme	Relevant Correspondence (see Appendix B for details)	OPG Response	CNSC Response	Status of Issue or Concern
					and timelines. CNSC staff will take an adaptive management approach to the oversight of the DNNP and OPG's commitments and follow up and monitoring programs, should it proceed, to ensure Curve Lake First Nation's Rights and interests are protected.	
CLFN #3	CLFN has raised concerns about potential impacts to Inherent, Aboriginal and Treaty Rights of the Michi Saagiig Anishinaabeg as a result of the DNNP. These impacts include, but are not limited to: • Impacts to fishing, hunting, and harvesting, • Impacts to spiritual landscapes, and • Impacts to species and places of cultural significance. CLFN notes that any impacts to the environment regardless of their Western-perceived severity, represent potential and often real impacts to Inherent, Aboriginal and Treaty Rights. CLFN raised concerns about how the DNNP may have potential impacts on the well-being of CLFN by increasing avoidance behaviours and fear towards the area around the Darlington site. CLFN raised concerns about impacts to accessing cultural and spiritual landscapes, or cultural activities such as fishing, harvesting, and hunting.	Impacts to Rights	July 27, 2023 CNSC email re RIA framework	In OPG's environmental monitoring and EA follow up program, OPG recognizes that while the assessment of environmental effects from DNNP has been satisfied from the Western/regulatory perspective, it may not fully address the impact of the DNNP on Indigenous inherent and treaty Rights as they are understood today. OPG endeavors to continue to work with Indigenous Nations and communities to appropriately identify the Rights impacted by the Project and to achieve feasible mitigation measures and/or accommodation. OPG has been engaging with CLFN to better understand concerns about the DNNP specific impacts on CLFN's Indigenous and/or Treaty Rights, through regular and ongoing meetings. OPG is in discussions with representatives of the WTFN to develop a pathway forward that includes a scoping exercise in Q1 2024 to begin to develop a plan to undertake an Indigenous Knowledge Study, which could include or lead to a cumulative effects study, a RIA and opportunities to identify and address the options for extended engagement with regards to environmental protection.	CNSC staff are committed to working collaboratively with CLFN to conduct a RIA for the DNNP Licence to Construct application . The goal of the RIA will be to gather available information, analyze potential impacts to Rights based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts in order to make a collaborative recommendation to the Commission about potential impacts on Rights from the DNNP. CNSC staff note that in the Commission's Record of Decision – Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment, issued 22 April 2024, the Commission directed CNSC staff to: Support OPG's collaborative work on the following study and assessments: • RIA • Indigenous Knowledge study • Cumulative Impacts Assessment CNSC staff remain committed to supporting CLFN and other WTFN's on each of the above listed studies.	CNSC staff's view is that the concerns around impacts to Treaty Rights will continue to be discussed and addressed through the RIA process. The full assessment and conclusions will be submitted to the Commission prior to the Licence to Construct Part-2 hearing. The RIA will include information, perspectives and recommendations from both CNSC staff's and CLFN's perspectives and positions.

ID #	Concern or issue	Theme	Relevant Correspondence (see Appendix B for details)	OPG Response	CNSC Response	Status of Issue or Concern
CLFN #4	CLFN has raised concerns about the need to include Indigenous world views, cultural keystone species and impacts to Michi Saagiig Rights in the regulatory process for the DNNP project.	Indigenous knowledge	N/A – discussed orally	OPG is working with CLFN and other interested WTFN to support and begin scoping an Indigenous Knowledge and Land use study and opportunities to identify and address the options for extended engagement with regards to environmental protection. OPG has shared the Environmental Monitoring and EA Follow Up Plan (EMEAF) with CLFN for their review, sought feedback on the plan as well as interest in participating in EA follow up programs. OPG commits to working with Indigenous Nations and communities to incorporate Indigenous and Traditional knowledge, where available, in order to further understand the potential impacts of the project and strengthen assessment and decision-making. OPG endeavours to apply Indigenous and Traditional knowledge into the framework for this EMEAF Plan as well. OPG welcomes all information that can be used to provide insight and continues discussion with Indigenous Nations and communities to better integrate Indigenous and Traditional knowledge into the project and ongoing monitoring and follow-up activities to ensure their Rights and interests remain protected.	CNSC staff are committed to working collaboratively with CLFN to conduct a RIA for the DNNP Licence to Construct application . The goal of the RIA will be to gather available information, analyze potential impacts to Rights based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts in order to make a collaborative recommendation to the Commission about potential impacts on Rights from the DNNP. CNSC staff have worked to incorporate Indigenous knowledge in the CNSC's Independent Environmental Monitoring Program (IEMP). For example, during the 2023 Darlington IEMP campaign, CLFN and representatives requested that CNSC staff test manoomin (wild rice) harvested from Chemong Lake east of CLFN and shared the spiritual and cultural importance of manoomin to their communities. CNSC staff are committed to continuing to collaborate on the CNSC's IEMP to consider and incorporate Indigenous Knowledge and cultural keystone species, as appropriate and available. CNSC staff are working to collaboratively draft sections of the Licence to Construct Consultation Report with CLFN and other interested Indigenous Nations and communities to ensure that their knowledge, perspectives and cultures are meaningfully reflected in CNSC staff's assessment and report to the Commission. CNSC staff provided comments from CLFN and other Indigenous Nations and communities to the CNSC's technical specialists to consider when conducting the assessments of OPG's documentation. CNSC also remains committed to supporting and Indigenous Knowledge and taking an adaptive management approach to the oversight and follow-up in relation to the DNNP, should it proceed, to ensure Curve Lake First Nation's Rights and interests are protected.	CNSC staff's view is that the concerns regarding incorporating Indigenous worldviews, cultural keystone species and impacts to Michi Saagiig Rights will continue to be addressed through the responses and commitments of OPG and CNSC staff, to the extent possible within the CNSC's mandate and regulatory requirements. CNSC staff are committed to applying an adaptive management approach to the environmental monitoring, follow up and oversight of the DNNP, should the project proceed, to ensure that CLFN's worldviews and knowledge is considered and reflected.

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					CNSC encourages OPG to continue to engage on the EMEAF Plan and incorporate Indigenous Knowledge where available.	
CLFN #5	CLFN raised concerns regarding the cumulative effects of the DNNP, as well as legacy impacts of the existing Darlington and Pickering Nuclear Power Generating Stations. CLFN is concerned that there remain gaps in the cumulative impacts that have been assessed through the history of this project. CLFN indicated that their view of cumulative effects is different than the CNSC. CLFN notes that they are looking at a different baseline (pre-contact) when considering cumulative effects. CLFN recommends that CNSC and OPG undertake comprehensive cumulative effects study, of which a mutually agreed upon scope is determined in collaboration with CLFN.	Cumulative and legacy impacts	N/A – discussed orally	OPG has worked collaboratively with CLFN to better understand their concerns regarding legacy impacts and cumulative effects. OPG is also working with CLFN and other WTFN on developing a pathway forward that includes a scoping exercise in Q1 2024 to begin to develop a plan to undertake an Indigenous Knowledge Study, which could include or lead to a cumulative effects study.	CNSC staff reviewed OPG's EIS Review and supporting documents and concluded that changes to the original assessment of cumulative environmental effects for the DNNP have been adequately assessed in the EIS Review. CNSC staff concur with OPG's assessment that residual significant adverse cumulative effects associated with the proposed deployment of BWRX-300 are not likely to occur when taking into consideration proposed mitigation measures. CNSC staff look at the cumulative effects to the environment as part of ongoing reviews. This includes environmental risk assessments. These assessments are done every five years and would provide staff with an indication as to whether there is a change in the risk profile for the environment around the facility. Further, information on environmental monitoring at the facility as well as from regional monitoring and IEMP also inform staff's ongoing review related to cumulative effects. CNSC staff are working collaboratively with CLFN to incorporate concerns regarding cumulative impacts into the RIA process for the DNNP Licence to Construct application , to ensure that existing information and CLFN's perspectives are documented and reflected in the RIA report. CNSC staff note that in the Commission's Record of Decision – Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment, issued 22 April 2024, the Commission directed CNSC staff to: Support OPG's collaborative work on the following study and assessments: • RIA • Indigenous Knowledge study • Cumulative Impacts Assessment	CNSC staff's view is that the cumulative effects concern will continue to be addressed by OPG and CNSC staff, as described in the response column.

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					CNSC staff are also open to supporting the scoping and implementation of a cumulative effects study, in collaboration with CLFN, other interested WTFN and OPG, to help inform the DNNP environmental monitoring and follow up program and future RIAs as appropriate. CNSC staff acknowledge that CLFN has broader concerns regarding cumulative and legacy effects, including the baseline that is considered when conducting cumulative effects assessments. CNSC staff remain committed to having further discussions with CLFN on the broader concern, including scoping out a path forward for addressing the concerns and working with other jurisdictions as appropriate. As the broader concern is not specific to the DNNP Licence to Construct application, CNSC staff will work with CLFN through the regular meetings under the Terms of Reference for Long-Term engagement to discuss the path forward on this topic.	
CLFN #6	CLFN is concerned that to date, information sharing, and engagement have occurred in relation to the DNNP, but meaningful consultation has not occurred. CLFN notes that within the context of consultation with First Nations, mutual understanding must be had regarding impacts on treaty Rights and possible accommodations. CLFN comments that at this time, no mutual understanding has been reached. CLFN is concerned that the CNSC and OPG have not considered or complied with the Gunshot Treaty (1877-87), the Williams Treaties (1923) or the Williams Treaties Settlement (2018). As such, it remains unclear as to how CNSC and OPG have meaningfully considered, consulted, and	Indigenous consultation	DNNP #1 Intervention	OPG has been conducting ongoing engagement with CLFN on the DNNP and has implemented a number of best practices, including early engagement on the technology selection process and on the EIS Review prior to its submission to the CNSC. OPG is in discussions with representatives of the WTFN to develop a pathway forward that includes a scoping exercise in Q1 2024 to begin to develop a plan to undertake an Indigenous Knowledge Study, which could include or lead to a cumulative effects study, a RIA and opportunities to identify and address the options for extended engagement with regards to environmental protection. DNNP team members are now required to participate in IR 101 training. This training includes a considerable amount of content on	The CNSC understands the importance of building a strong and ongoing relationship with CLFN and ensuring that the consultation process is meaningful and addresses the concerns raised by CLFN. As an agent of the Crown, the CNSC has responsibility for fulfilling its legal Duty to Consult, and where appropriate accommodate. Through the consultation and accommodation process, the CNSC seeks to understand and accommodate Indigenous peoples when its decisions may have an adverse impact on potential or established Indigenous and/or treaty Rights. CNSC staff work in collaboration and consultation with potentially impacted Indigenous Nations and communities to assess potential impacts on Rights and propose mitigation or accommodation measures to address identified impacts. CNSC staff have been conducting ongoing consultation and engagement with CLFN regarding the DNNP, including on the renewal of the Licence to Prepare Site in 2021, the Licence to Construct application and the EIS review process. CNSC's approach to consultation and engagement are in line with best practices and are flexible based on the specific needs and requests of each potentially impacted Indigenous Nation and community. The CNSC has sought input and feedback from CLFN and other WTFN on how they would like to be consulted	CNSC staff's view is that the concerns about meaningful consultation has been and will continue to be addressed through the responses and commitments of OPG and CNSC staff. CNSC staff remain committed to continuously improving the approach to consultation throughout the lifecycle of the DNNP (should the project proceed) based on feedback from Curve Lake First Nation. Additionally, CNSC staff's view is that the

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	accommodated impacts to CLFN's Rights CLFN notes that the CNSC should adhere to the United Nations principles of Free Prior and Informed Consent (FPIC). CLFN is concerned about how they will be meaningfully consulted throughout the DNNP and during processes where key decisions or determinations which may have resulted in potential negative impacts to Rights.			the Treaties in hopes of increasing literacy within the management team.	specifically for the DNNP Licence to Construct application and what would be meaningful for them. The CNSC remains committed to working with CLFN on finding a path forward to ensure that consultation and ongoing engagement related to the DNNP is meaningful, responsive and flexible. CNSC staff acknowledge that CLFN has broader concerns regarding the CNSC's approach to consultation, including the policy, regulatory and legislative framework that the CNSC works within. CNSC staff are also committed to discussions regarding the CNSC's approach to consultation. As the broader concern is not specific to the DNNP Licence to Construct application, CNSC staff will work with CLFN through the regular meetings under the Terms of Reference for Long-Term engagement to discuss the path forward on this topic. CNSC staff are committed to working collaboratively with CLFN to conduct a RIA for the DNNP Licence to Construct application . The goal of the RIA will be to gather available information, analyze potential impacts to Rights based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts in order to make a collaborative recommendation to the Commission about potential impacts on Rights from the DNNP. CNSC staff are committed to providing funding and support for an Indigenous Knowledge and Land Use studies with CLFN and other interested WTFN. The results of these studies could then help inform an adaptive management approach and EA follow-up monitoring program, which will ensure the DNNP project and related activities, should it proceed, would be protective of Rights and interests. CNSC staff and CLFN have a Terms of Reference for Long-term engagement and ongoing funding and capacity support for CLFN, which provides a forum identifying additional areas of interest and where CLFN and CNSC staff can collaborate and work together to understand, assess and meaningfully address their concerns. This includes working with OPG to identify meaningful mitigations, commitments and accommodations to	concerns around impacts to Treaty Rights will continue to be discussed and addressed through the RIA process, the full assessment and conclusions will be submitted to the Commission prior to the Licence to Construct Part-2 hearing. The RIA will include information, perspectives and recommendations from both CNSC staff's and CLFN's perspectives and positions.

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					address the concerns being raised by CLFN with regards to the DNNP's potential impacts on their Rights and interests. Additionally, CNSC staff are aware that OPG is working with Curve Lake First Nation and other interested WTFN to support an Indigenous Knowledge and Land use study. OPG has committed to continuing to make updates to their environmental protection program and EA follow-up monitoring program, as additional Indigenous Knowledge is shared. CNSC staff will continue to monitor OPG's Indigenous engagement activities related to the DNNP, should the project proceed, to ensure that OPG engages CLFN on key topics of interest and is responsive to questions or concerns raised.	
CLFN #7	CLFN raised concerns about the legislative, regulatory and engagement processes that have been relied upon to contemplate, evaluate, and develop the DNNP project. CLFN has raised concerns that the DNNP regulatory process should include the standards and principles under the 2019 Impact Assessment Act. Additional standards of the IAA (2019) include a mandatory Follow-up Program inclusive of current IAA considerations (the current EMAMF is not inclusive of all IAA considerations), Gender-Based Plus Analysis (GBA+), decisions guided by Indigenous knowledge, and a comprehensive consideration of sustainability encompassing positive and negative impacts on the environment, economics, social aspects, and health. CLFN recommends that CNSC and OPG undertake a detailed gap analysis which would consider discrepancies between the 1992 CEAA, which was	Regulatory requirements		OPG's EMEAF Plan notes that OPG commits to working with Indigenous Nations and communities to incorporate Indigenous and Traditional knowledge, where available, in order to further understand the potential impacts of the project and strengthen assessment and decision-making. OPG endeavours to apply Indigenous and Traditional knowledge into the framework for this EMEAF Plan as well. OPG welcomes all information that can be used to provide insight and continues discussion with Indigenous Nations and communities to better integrate Indigenous and Traditional knowledge into the project. OPG is committing to enhance their environmental protection and follow-up monitoring program, based on the information collected through the Indigenous knowledge study that OPG has committed to supporting. OPG's goal is to build a comfort level between OPG and the communities that the DNNP is protective of the environment and their Rights.	The DNNP EA was conducted and approved under the Canadian Environmental Assessment Act of 1992, which was the governing legislation at the time. The Impact Assessment Act does not apply to the DNNP as a decision has already been rendered by the Joint Review Panel (JRP) and the Federal Government on this proposed project under the former Act; the environmental assessment decision remains applicable. Based on CNSC staff's review of the EA and the PPE review, CNSC staff find that OPG's selected technology is within the bound of the EA taking into account the recommendations, mitigation measures and follow up program. The Commission Decision on the hearing on the applicability the EA to OPG's chosen technology also indicated that BWRX-300 is not fundamentally different from the technologies assessed in the Environmental Assessment and a new EA is not required. The Commission concluded that the predicted environmental effects associated with the BWRX-300 reactor technology are bounded by the EA. The requirement to implement the EA Follow-Up program required under CEAA 1992 is carried through to the proposed Licence to Construct, and documented in the proposed *Licence Conditions Handbook (LCH) for a Licence to Construct.* CNSC staff will include an explicit requirement in the LCH that	CNSC staff's view is that these concerns have been addressed to the extent possible within the CNSC's mandate and regulatory requirements. CNSC staff note the Impact Assessment Act does not apply, as this project has already undergone an Environmental Assessment under the former Canadian Environmental Assessment Act of 1992. The Commissions decision concluded that the predicted environmental effects associated with the BWRX-300 reactor technology are bounded by the EA.

ID #	Concern or issue	Theme	Relevant Correspondence (see Appendix B for details)	OPG Response	CNSC Response	Status of Issue or Concern
	relied upon for the 2009 DNNP approval, and the 2019 Impact Assessment Act (IAA).			OPG has proposed that an environment sub-committee be formed to design the above-mentioned Environmental Monitoring Augmentation Plan as well as complete an assessment of the standards of 2009 and today, to understand where we can work together to meet and exceed current standards.	requires OPG to follow through with their commitments with the WTFN's when updating the EA Follow-Up program. CNSC staff have committed to considering current standards and best practices when conducting consultation and engagement for the DNNP. This includes on the Licence to Construct application and the ongoing monitoring, follow up and oversight, should the DNNP proceed. CNSC staff are working on a collaborative RIA with CLFN to gather available information, analyze potential impacts to Rights based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts in order to make a collaborative recommendation to the Commission about potential impacts on Rights from the DNNP. CNSC staff are aware that OPG has committed to collaboratively, with Hiawatha FN and other interested WTFNs, reviewing the environmental work done in 2009 and determine what needs to be updated to todays standards. OPG is committing to conduct an environmental monitoring augmentation program to apply an Indigenous knowledge lens and involve interested WTFN in the on-site environmental monitoring. CNSC staff understand that OPG and the WTFNs, including Hiawatha FN, are currently in the scoping phase of this project.	Therefore, OPG is not required to undertake the requirements under the Impact Assessment Act. However, CNSC staff are committed to continuing discuss the concerns with CLFN and OPG as well as consider potential additional ways to address the concerns. CNSC staff are also committed to taking an adaptive management approach to the DNNP follow up and environmental monitoring with CLFN. CNSC staff will also work collaboratively with CLFN to ensure OPG fulfils their commitments.
CLFN #8	CLFN raised concerns regarding the potential impacts on the environment, including on species at risk, bats, surface and groundwater, air quality, aquatic habitat, and terrestrial environment. CLFN noted that any impacts to the environment regardless of their Western-perceived severity, represent	Environmental impacts	N/A – discussed orally	OPG recognizes that while the assessment of environmental effects from DNNP has been satisfied from the Western/regulatory perspective, it may not fully address the impact of the DNNP on Indigenous inherent and treaty Rights as they are understood today. OPG endeavors to continue to work with Indigenous Nations and communities to appropriately identify the Rights impacted by the Project and to achieve feasible	CNSC staff have reviewed the EA, OPG's EIS Review, the updated PPE, as well as relevant supporting documentation. CNSC staff expect no significant residual adverse environmental effects from the deployment of up to four BWRX-300 reactors, provided the mitigation measures identified in the EA are implemented, as required by OPG's EA follow-up program. CNSC staff also conclude that OPG has adequately assessed changes to baseline environmental conditions for environmental components assessed in the EA.	CNSC staff's view is that the concerns regarding impacts to the environment have and will continue to be addressed through the responses and commitments of OPG and CNSC staff, to the extent possible within the CNSC's mandate

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	potential and often real impacts to Inherent, Aboriginal and Treaty Rights. CLFN noted that regardless of the western scientific approach that concludes that there are not expected to be significant residual adverse environmental impacts provided mitigation measures are implemented, the environment will still be altered. CLFN raised concerns regarding the incremental erosion of the environment, noting that individual projects and decisions may not seem significant, but it becomes a concern when viewed through a holistic lens. CLFN indicated that the Province and society will receive benefits from the DNNP, and that CLFN should see benefits as well.			mitigation measures and/or accommodations. OPG has been having discussions with CLFN to better understand and work to address their concerns about potential environmental impacts including consideration for augmented monitoring.	The Commission Decision on the hearing on the applicability the EA to OPG's chosen technology also indicated that BWRX-300 is not fundamentally different from the technologies assessed in the Environmental Assessment and a new EA is not required. The Commission concluded that the predicted environmental effects associated with the BWRX-300 reactor technology are bounded by the EA. CNSC staff acknowledge CLFN's view that the DNNP will still result in changes to the environment; that the Western approach that leads to the conclusion of no significant residual adverse environmental effects provided mitigation measures are identified is in contrast to the Indigenous inherent and treaty Rights approach. There is also discussion needed to better explain what benefits from the DNNP would be applicable to CLFN. There is also discussion needed to define the baseline upon which impact is determined. CNSC staff encourage OPG to work with CLFN to consider ways to address and mitigate their concerns regarding impacts and changes to the environment from the potential construction of the DNNP. CNSC staff acknowledges CLFN's concern that any impacts on the environment, even with mitigation measures applied, represents a potential impact on CLFN's Rights. CNSC staff are committed to working collaborative with CLFN to conduct a RIA for the DNNP Licence to Construct application . The goal of the RIA will be to gather available information, analyze potential impacts to Rights based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts in order to make a collaborative recommendation to the Commission about potential impacts on Rights from the DNNP Licence to Construct application . CNSC staff are committed to providing funding and support for an Indigenous Knowledge studies with CLFN and other interested WTFN. The results of these studies could then help inform an adaptive management approach to OPG's EA follow-up monitoring program, which will ensure the DNNP project and related activities, should it proceed, would be protective of Rights and interests.	and regulatory requirements. Additionally, CNSC staff's view is that the concerns around impacts to Treaty Rights will continue to be discussed and addressed through the RIA process. The full assessment and conclusions will be submitted to the Commission prior to the Licence to Construct Part-2 hearing. The RIA will include information, perspectives and recommendations from both CNSC staff's and CLFN's perspectives.

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					Additionally, CNSC staff are aware that OPG is working with Curve Lake First Nation and other interested WTFN to support an Indigenous study. OPG has committed to continuing to make updates to their environmental protection program, as additional Indigenous Knowledge is shared. CNSC staff confirmed that OPG collaborated with CLFN to better understand their concerns regarding potential impacts on the environment. CNSC staff are aware that OPG has been engaging CLFN on permits of interest, including the Endangered Species Act permit. CNSC staff are aware that OPG has agreed to undertake recommendations made by CLFN and work with them to create and implement monitoring plans, including related to bats. CNSC staff will continue to monitor the OPG's Indigenous engagement activities, including with regards to monitoring and follow-up measures.	

A.3 Issues Tracking Table for Hiawatha First Nation (Hiawatha FN) with respect to the Darlington New Nuclear Project (DNNP)

Note – CNSC staff shared this table with Hiawatha FN for their review on February 9, 2024 and an updated copy on May 17, 2024. On June 26, 2024 Hiawatha First Nation provided high level comments and confirmed that they would make additions to the table. Due to the timing of submission of the comments, CNSC staff were unable to make substantive updates to this version of the table. However, Hiawatha First Nation and CNSC staff confirmed that the comments would be incorporated and reflected in the supplemental submission, in advance of the Part 2 hearing on the DNNP licence to construct application. CNSC staff note that the issues and concerns listed in this table are the views that Hiawatha First Nation has previously expressed, through written and oral submissions to the CNSC.

ID #	**Concern or issue**	**Theme**	**Relevant Correspondence** (see Appendix B for details)	**OPG Response**	**CNSC Response**	**Status of Issue or Concern**
Hiawatha FN #1	Hiawatha FN has raised concerns about the process for assessing impacts to Rights, outlined in the CNSC's RIA (RIA) Framework. Hiawatha FN is concerned about the CNSC's definition of current baseline conditions and cumulative effects. Hiawatha FN also fundamentally disagrees with assigning a severity to impacts on Rights. Hiawatha FN notes that indicating severity diminishes their Rights. Hiawatha FN reiterates that any potential impact on the environment, regardless of mitigation measures, will impact their right.	Impacts to Rights and RIA process	July 27, 2023 CNSC email re RIA framework January 5, 2024 CNSC email	OPG has been having discussions with Hiawatha FN about the approach to conducting a RIA, based on the WTFN Indigenous Knowledge study OPG has committed to supporting. In the Environmental Monitoring and EA Follow up (EMEAF) Plan, OPG notes that they endeavor to continue to work with Indigenous Nations and communities to appropriately identify the Rights impacted by the Project and to achieve feasible mitigation measures and/or accommodation.	The baseline being considered in an RIA is defined as: the current environmental conditions, present-day exercise of Rights by the Indigenous Nation or community, and existing activities that have affected or could affect the conditions that support or limit the Indigenous Nation or community's meaningful exercise of Rights. The baseline for an RIA should consider the conditions necessary to allow a community to continue to exercise its Rights and how historical and current cumulative effects may already impact those conditions, or how future foreseeable projects may have an impact (i.e. Territorial capacity). This can include additional context such as the Nation's perspectives on the importance, value, uniqueness of an area as well as territorial capacity – which refers to the ability of the Indigenous Nation or community to exercise their Rights in their preferred manner. An RIA should also consider the historical and future context in which Rights are practiced when evaluating the magnitude of potential project impacts relative to the established baseline. This is approach is based on best practices and methodology for RIAs as established by the Impact Assessment Agency of Canada and the CNSC in collaboration with Indigenous Nations and communities and experts in RIA. The RIA framework uses a methodological approach to assessing impacts on Rights, with the goal of coming to a mutual understanding of the severity of any identified potential impacts on potential or established Rights and interests, as a result of a proposed project, as well as to identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts as a result of the proposed project or activity. CNSC staff acknowledge that Hiawatha FN often takes a more holistic approach, conceptualizing cumulative	CNSC staff's view is that the concerns around impacts to Treaty Rights will continue to be discussed and addressed through the collaborative RIA process. The full assessment and conclusions will be submitted to the Commission prior to the Licence to Construct Part-2 hearing. The RIA will include information, perspectives and recommendations from both CNSC staff's and Hiawatha FN's perspectives.

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					impacts on a spiritual, cultural, and geographic (watershed and treaty territory) level. The RIA will include information about Hiawatha FN's concerns about the process and perspectives on their Rights and interests to ensure that the Commission receives fulsome information from both CNSC staff's and CLFN's perspectives with regards to the project's potential impacts on their Rights and interests and how the concerns can be addressed.	
Hiawatha FN #2	Hiawatha FN is concerned that there remain significant gaps in the ability of CNSC, OPG and Hiawatha FN to fully identify, understand and comprehensively address potential impacts to Inherent, Aboriginal and Treaty Rights by the DNNP. Hiawatha FN requests that CNSC and OPG evaluate opportunities for Hiawatha FN to be able to gather the requisite information for a complete understanding of the potential and real impacts to the inherent, Aboriginal and Treaty Rights of Hiawatha FN. At a minimum, this could occur through the completion of a RIA that is informed by a territorial Indigenous Knowledge Study, a comprehensive cumulative impact assessment, and Rights-based requirements, needs and improvements, including Rights informed approaches to mitigations, compensations, and restorations.	Impacts to Rights	July 27, 2023 CNSC email re RIA framework	OPG is in discussions with representatives of the WTFN to develop a pathway forward that includes a scoping exercise in Q1 2024 to begin to develop a plan to undertake an Indigenous Knowledge Study with interested WTFN including Hiawatha FN, which could include or lead to a cumulative effects study, a RIA (which is being conducted by the CNSC) and opportunities to identify and address the options for extended engagement with regards to environmental protection. OPG has made and is committed to continuing to make updates to the environmental protection program and EA follow up monitoring , as additional Indigenous Knowledge is shared.	CNSC staff have acknowledged Hiawatha FN's concerns regarding the gaps in information that limit the ability for all parties to identify and understand potential impacts to Rights. CNSC staff and Hiawatha FN have had many discussions regarding the approach to the RIA for the DNNP Licence to Construct to ensure that the CNSC is able to better understand and assess these concerns based on the information available at this time. The goal of the RIA will be to gather available information, analyze potential impacts to Rights based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts in order to make a collaborative recommendation to the Commission about potential impacts on Rights from the DNNP. The report will include information about Hiawatha FN's concerns that have been identified and views regarding gaps in information, such as Indigenous Knowledge and land/water use data. CNSC staff have been offering to support an Indigenous Knowledge study with interested WTFN for many years and it has been in the Hiawatha FN-CNSC ToR for long-term engagement workplan since Hiawatha FN signed a ToR in May 2023. CNSC staff remain committed to supporting an Indigenous Knowledge and land use study and taking an adaptive management approach to the oversight of the DNNP and OPG's commitments and follow up and monitoring programs, should it proceed, to ensure Hiawatha FN Rights and interests are protected.	CNSC staff's view is that the concerns around impacts to Treaty Rights will continue to be discussed and addressed through the collaborative RIA process. The full assessment and conclusions will be submitted to the Commission prior to the Licence to Construct Part-2 hearing. The RIA will include information, perspectives and recommendations from both CNSC staff's and Hiawatha FN's perspectives.
Hiawatha FN #3	Hiawatha FN has raised concerns about potential impacts to Inherent, Aboriginal and Treaty Rights of the Michi Saagiig	Impacts to Rights		In OPG's environmental monitoring and EA follow up program, OPG recognizes that while the assessment of environmental	CNSC staff are committed to working collaborative with Hiawatha FN to conduct a RIA for the DNNP Licence to Construct application . The goal of the RIA will be to gather available	CNSC staff's view is that the concerns around impacts to Treaty Rights

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	Anishinaabeg, as a result of the DNNP. These impacts include, but are not limited to: • Impacts to fishing, hunting, and harvesting, • Impacts to spiritual landscapes, and • Impacts to species and places of cultural significance. Hiawatha FN notes that any impacts to the environment regardless of their Western-perceived severity, represent potential and often real impacts to Inherent, Aboriginal and Treaty Rights. Hiawatha FN raised concerns about how the DNNP may have potential impacts on the well-being of Hiawatha FN by increasing avoidance behaviours and fear towards the area, around the Darlington site. Hiawatha FN raised concerns about impacts to accessing cultural and spiritual landscapes, or cultural activities such as fishing, harvesting, and hunting.		July 27, 2023 CNSC email re RIA framework	effects from DNNP has been satisfied from the Western/ regulatory perspective, it may not fully address the impact of the DNNP on Indigenous inherent and treaty Rights as they are understood today. OPG endeavors to continue to work with Indigenous Nations and communities to appropriately identify the Rights impacted by the Project and to achieve feasible mitigation measures and/or accommodation. OPG has been engaging with Hiawatha FN to better understand concerns about the DNNP specific impacts on Hiawatha FN's Indigenous and/or Treaty Rights, through regular and ongoing meetings. OPG is in discussions with representatives of the WTFN to develop a pathway forward that includes a scoping exercise in Q1 2024 to begin to develop a plan to undertake an Indigenous Knowledge Study, which could include or lead to a cumulative effects study, a RIA and opportunities to identify and address the options for extended engagement with regards to environmental protection.	information, analyze potential impacts to Rights based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts in order to make a collaborative recommendation to the Commission about potential impacts on Rights from the DNNP. CNSC staff note that in the Commission's Record of Decision – Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment, issued 22 April 2024, the Commission directed CNSC staff to: Support OPG's collaborative work on the following study and assessments: • RIA • Indigenous Knowledge study • Cumulative Impacts Assessment CNSC staff remain committed to supporting Hiawatha FN and other WTFN's on each of the above listed studies.	will continue to be discussed and addressed through the collaborative RIA process. The full assessment and conclusions will be submitted to the Commission prior to the Licence to Construct Part-2 hearing. The RIA will include information, perspectives and recommendations from both CNSC staff's and Hiawatha FN's perspectives.
Hiawatha FN #4	Hiawatha FN has raised concerns about the need to include Indigenous world views, cultural keystone species and impacts to Michi Saagiig Rights in the regulatory process for the DNNP project.	Indigenous knowledge	March 20, 2023 Hiawatha FN comments	OPG is working with Hiawatha FN and other interested WTFN to support and begin scoping an Indigenous Knowledge and Land use study and opportunities to identify and address the options for extended engagement with regards to environmental protection. In OPG's Indigenous Engagement Report, OPG indicates that they have shared the Environmental Monitoring and EA Follow Up Plan (EMEAF) with Hiawatha FN for their review, sought feedback on the plan as	CNSC staff are committed to working collaboratively with Hiawatha FN to conduct a RIA for the DNNP Licence to Construct application . The goal of the RIA will be to gather available information, analyze potential impacts to Rights based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts in order to make a collaborative recommendation to the Commission about potential impacts on Rights from the DNNP. CNSC staff have worked to incorporate Indigenous knowledge in the CNSC's Independent Environmental Monitoring Program	CNSC staff's view is that the concerns regarding incorporating Indigenous worldviews cultural keystone species and impacts to Michi Saagiig Rights will continue to be addressed through the responses and commitments of OPG and CNSC staff, to the extent possible within the

ID #	Concern or issue	Theme	Relevant Correspondence (see Appendix B for details)	OPG Response	CNSC Response	Status of Issue or Concern
				well as interest in participating in the EA follow up programs. In OPG's environmental monitoring and EA follow up program, OPG commits to working with Indigenous Nations and communities to incorporate Indigenous and Traditional knowledge, where available, in order to further understand the potential impacts of the project and strengthen assessment and decision-making. OPG endeavours to apply Indigenous and Traditional knowledge into the framework for this EMEAF Plan as well. OPG welcomes all information that can be used to provide insight and continues discussion with Indigenous Nations and communities to better integrate Indigenous and Traditional knowledge into the project, and ongoing monitoring and follow-up activities to ensure their Rights and interests remain protected.	(IEMP). For example, representatives from Hiawatha FN attended the IEMP sampling around the Darlington site in September 2023. CNSC staff are currently working with Hiawatha FN to review sampling plans for upcoming IEMP campaigns and are open to sampling locations or species of cultural significance. CNSC staff are committed to continuing to collaborate on the CNSC's IEMP to consider and incorporate Indigenous Knowledge and cultural keystone species, as appropriate and available. CNSC staff are working to collaboratively draft sections of the Licence to Construct Consultation Report with Hiawatha FN and other interested WTFN to ensure that their knowledge, perspectives and cultures are meaningfully reflected in CNSC staff's assessment and report to the Commission. CNSC staff provided comments from Hiawatha FN and other Indigenous Nations and communities to the CNSC's technical specialists to consider when conducting the assessments of OPG's documentation. CNSC also remains committed to supporting and Indigenous Knowledge and taking an adaptive management approach to the oversight and follow-up in relation to the DNNP, should it proceed, to ensure Hiawatha FN's Rights and interests are protected. CNSC encourages OPG to continue to engage on the EMEAF Plan and incorporate Indigenous Knowledge where available.	CNSC's mandate and regulatory requirements. CNSC staff are committed to applying an adaptive management approach to the environmental monitoring, follow up and oversight of the DNNP, should the project proceed, to ensure that Hiawatha FN's worldviews and knowledge is considered and reflected.
Hiawatha FN #5	Hiawatha FN raised concerns regarding the cumulative effects of the DNNP, as well as legacy impacts of the existing Darlington and Pickering Nuclear Power Generating Stations. Hiawatha FN is concerned that there remain gaps in the cumulative impacts that have been assessed through the history of this project Hiawatha FN recommends that CNSC and OPG undertake comprehensive cumulative effects study, of which a mutually agreed upon scope is	Cumulative and legacy impacts		OPG has worked collaboratively with Hiawatha FN to better understand their concerns regarding legacy impacts and cumulative effects. OPG is also working with Hiawatha FN and other WTFN on developing a pathway forward that includes a scoping exercise in Q1 2024 to begin to develop a plan to undertake an Indigenous Knowledge Study, which could include or lead to a cumulative effects study.	CNSC staff reviewed OPG's EIS Review and supporting documents and concluded that changes to the original assessment of cumulative environmental effects for the DNNP have been adequately assessed in the EIS Review. CNSC staff concur with OPG's assessment that residual significant adverse cumulative effects associated with the proposed deployment of BWRX-300 are not likely to occur when taking into consideration proposed mitigation measures. CNSC staff look at the cumulative effects to the environment as part of ongoing reviews. This includes environmental risk assessments. These assessments are done every five years and would provide staff with an indication as to whether there is a change in the risk profile for the environment around the facility.	CNSC staff's view is that the cumulative effects concern has been and will continue to be addressed by OPG and CNSC staff, as described in the response column.

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	determined in collaboration with Hiawatha FN				Further, information on environmental monitoring at the facility as well as from regional monitoring and IEMP also inform staff's ongoing review related to cumulative effects. CNSC staff are working collaboratively with Hiawatha FN to incorporate concerns regarding cumulative impacts into the RIA process for the DNNP Licence to Construct application , to ensure that existing information and Hiawatha FN's perspectives are documented and reflected in the RIA report. CNSC staff note that in the Commission's Record of Decision – Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment, issued 22 April 2024, the Commission directed CNSC staff to: Support OPG's collaborative work on the following study and assessments: • RIA • Indigenous Knowledge study • Cumulative Impacts Assessment CNSC staff are also open to supporting the scoping and implementation of a cumulative effects study, in collaboration with Hiawatha FN, other interested WTFN and OPG, to help inform the DNNP environmental monitoring and follow up program and future RIAs as appropriate.	
Hiawatha FN #6	Hiawatha FN is concerned that to date, information sharing, and engagement have occurred in relation to the DNNP, but meaningful consultation has not occurred. Hiawatha FN notes that within the context of consultation with First Nations, mutual understanding must be had regarding impacts on treaty Rights and possible accommodations. Hiawatha FN comments that at this time,	Indigenous consultation		OPG has been conducting ongoing engagement with Hiawatha FN on the DNNP and has implemented a number of best practices, including early engagement on the technology selection process and on the EIS Review prior to its submission to the CNSC. OPG is in discussions with representatives of the WTFN to develop a pathway forward that includes a scoping exercise in Q1 2024 to begin to develop a plan to undertake an Indigenous Knowledge Study, which could include or lead to a cumulative effects study,	The CNSC understands the importance of building a strong and ongoing relationship with Hiawatha FN and ensuring that the consultation process is meaningful and addresses the concerns raised by Hiawatha FN. As an agent of the Crown, the CNSC has responsibility for fulfilling its legal duty to consult, and where appropriate accommodate Indigenous peoples when its decisions may have an adverse impact on potential or established Indigenous and/or treaty Rights. CNSC staff have been conducting ongoing consultation and engagement with Hiawatha FN regarding the DNNP, including on the renewal of the Licence to Prepare Site in 2021, the Licence to Construct application and the EIS review process. CNSC's approach to consultation and engagement are in line with best	CNSC staff's view is that the concerns about meaningful consultation have and will continue to be addressed through the responses and commitments of OPG and CNSC staff. CNSC staff remain committed to continuously improving the approach to consultation throughout the lifecycle of the DNNP (should the project

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	no mutual understanding has been reached. Hiawatha FN is concerned that the CNSC and OPG have not considered or complied with the Gunshot Treaty (1877-87), the Williams Treaties (1923) or the Williams Treaties Settlement (2018). As such, it remains unclear as to how CNSC and OPG have meaningfully considered, consulted, and accommodated impacts to Hiawatha FN's Rights Hiawatha FN notes that the CNSC should adhere to the United Nations principles of Free Prior and Informed Consent (FPIC). Hiawatha FN is concerned about how they will be meaningfully consulted throughout the DNNP and during processes where key decisions or determinations which may have resulted in potential negative impacts to Rights.			a RIA and opportunities to identify and address the options for extended engagement with regards to environmental protection. DNNP team members are now required to participate in IR 101 training. This training includes a considerable amount of content on the Treaties in hopes of increasing literacy within the management team.	practices and are flexible based on the specific needs and requests of each potentially impacted Indigenous Nation and community. The CNSC has consistently sought input and feedback from Hiawatha FN and other WTFN on how they would like to be consulted for the DNNP and what would be meaningful for them. The CNSC remains committed to working with Hiawatha FN on finding a path forward to ensure that consultation and ongoing engagement are meaningful, responsive and flexible. CNSC staff are committed to working collaborative with Hiawatha FN to conduct a RIA for the DNNP Licence to Construct application . The goal of the RIA will be to gather available information, analyze potential impacts to Rights based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts in order to make a collaborative recommendation to the Commission about potential impacts on Rights from the DNNP. CNSC staff are committed to providing funding and support for an Indigenous Knowledge and Land Use studies with Hiawatha FN and other interested WTFN. The results of these studies could then help inform an adaptive management approach and EA follow-up monitoring program, which will ensure the DNNP project and related activities, should it proceed, would be protective of Rights and interests. CNSC staff and Hiawatha FN have a Terms of Reference for Long-term engagement and ongoing funding and capacity support Hiawatha FN, which provides a forum identifying additional areas of interest and where Hiawatha FN and CNSC staff can collaborate and work together to understand, assess and meaningfully address their concerns. This includes working with OPG to identify meaningful mitigations, commitments and accommodations to address the concerns being raised by CLFN with regards to the DNNP's potential impacts on their Rights and interests. Additionally, CNSC staff are aware that OPG is working with Hiawatha FN and other interested WTFN to support an Indigenous Knowledge and Land use study. OPG has committed to continuing to make updates to their environmental protection program and EA	proceed) based on feedback from Hiawatha FN. Additionally, CNSC staff's view is that the concerns around impacts to Treaty Rights will continue to be discussed and addressed through the collaborative RIA process. The full assessment and conclusions will be submitted to the Commission prior to the Licence to Construct Part-2 hearing. The RIA will include information, perspectives and recommendations from both CNSC staff's and Hiawatha FN's perspectives

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					follow-up monitoring program, as additional Indigenous Knowledge is shared. CNSC staff will continue to monitor OPG's Indigenous engagement activities related to the DNNP, should the project proceed, to ensure that OPG engages Hiawatha FN on key topics of interest and is responsive to questions or concerns raised.	
Hiawatha FN #7	Hiawatha FN raised concerns about the legislative, regulatory and engagement processes that have been relied upon to contemplate, evaluate, and develop the DNNP project. Hiawatha FN has raised concerns that the DNNP regulatory process should include the standards and principles under the 2019 Impact Assessment Act. Additional standards of the IAA (2019) include a mandatory Follow-up Program inclusive of current IAA considerations (the current EMAMF is not inclusive of all IAA considerations), Gender-Based Plus Analysis (GBA+), decisions guided by Indigenous knowledge, and a comprehensive consideration of sustainability encompassing positive and negative impacts on the environment, economics, social aspects, and health. Hiawatha FN recommends that CNSC and OPG undertake a detailed gap analysis which would consider discrepancies between the 1992 CEAA, which was relied upon for the 2009 DNNP approval, and the 2019 Impact Assessment Act (IAA).	Regulatory requirements		OPG's EMEAF Plan notes that OPG commits to working with Indigenous Nations and communities to incorporate Indigenous and Traditional knowledge, where available, in order to further understand the potential impacts of the project and strengthen assessment and decision-making. OPG endeavours to apply Indigenous and Traditional knowledge into the framework for this EMEAF Plan as well. OPG welcomes all information that can be used to provide insight and continues discussion with Indigenous Nations and communities to better integrate Indigenous and Traditional knowledge into the project. OPG is committing to enhance their environmental protection and follow up monitoring program, based on the information collected through the Indigenous knowledge study that OPG has committed to supporting. OPG's goal is to build a comfort level between OPG and the communities that the DNNP is protective of the environment and their Rights. OPG has proposed that an environment sub-committee be formed to design the above-mentioned Environmental Monitoring Augmentation Plan as well as complete an assessment of the standards of 2009 and today, to understand where we can work	The DNNP EA was conducted and approved under the Canadian Environmental Assessment Act of 1992, which was the governing legislation at the time. The Impact Assessment Act does not apply to the DNNP as a decision has already been rendered by the JRP and the Federal Government on this proposed project under the former Act; the environmental assessment decision remains applicable. Based on CNSC staff's review of the EA and the PPE review, CNSC staff find that OPG's selected technology is within the bound of the EA taking into account the recommendations, mitigation measures and follow up program. The Commission Decision on the hearing on the applicability the EA to OPG's chosen technology also indicated that BWRX-300 is not fundamentally different from the technologies assessed in the Environmental Assessment and a new EA is not required. The Commission concluded that the predicted environmental effects associated with the BWRX-300 reactor technology are bounded by the EA. The requirement to implement the EA Follow-Up program required under CEAA 1992 is carried through to the proposed Licence to Construct, and documented in the proposed *Licence Conditions Handbook (LCH) for a Licence to Construct.* CNSC staff will include an explicit requirement in the LCH that requires OPG to follow through with their commitments with the Nations when updating the EA Follow-Up program. CNSC staff have committed to considering current standards and best practices when conducting consultation and engagement for the DNNP. This includes on the Licence to Construct application and the ongoing monitoring, follow up and oversight, should the DNNP proceed.	CNSC staff's view is that these concerns have been addressed to the extent possible within the CNSC's mandate and regulatory requirements. CNSC staff note the Impact Assessment Act does not apply, as this project has already undergone an Environmental Assessment under the former Canadian Environmental Assessment Act of 1992. The Commissions decision concluded that the predicted environmental effects associated with the BWRX-300 reactor technology are bounded by the EA. Therefore, OPG is not required to undertake the requirements under the Impact Assessment Act.

ID #	Concern or issue	Theme	Relevant Correspondence (see Appendix B for details)	OPG Response	CNSC Response	Status of Issue or Concern
				together to meet and exceed current standards.	CNSC staff are working on a collaborative RIA with Hiawatha FN to gather available information, analyze potential impacts to Rights based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts in order to make a collaborative recommendation to the Commission about potential impacts on Rights from the DNNP. CNSC staff are aware that OPG has committed to collaboratively, with Hiawatha FN and other interested WTFNs, reviewing the environmental work done in 2009 and determine what needs to be updated to todays standards. OPG is committing to conduct an environmental monitoring augmentation program to apply an Indigenous knowledge lens and involve interested WTFN in the on-site environmental monitoring. CNSC staff understand that OPG and the WTFNs, including Hiawatha FN, are currently in the scoping phase of this project.	
Hiawatha FN #8	Hiawatha FN raised concerns regarding the potential impacts on the environment, including on species at risk, bats, surface and groundwater, air quality, aquatic habitat, and terrestrial environment. Hiawatha FN commented on the need to included cultural keystone species in all monitoring aspects of the DNNP. Hiawatha FN requested that OPG provided more information about expected impacts, monitoring and work to reduce disruption related to wetlands, amphibians, reptiles, wildlife, butterflies, bats, invertebrate and birds of cultural significance. Hiawatha FN notes that any impacts to the environment regardless of their Western-perceived severity, represent	Environmental impacts	March 20, 2023 Hiawatha FN comments	OPG's EMEAF Plan recognizes that while the assessment of environmental effects from DNNP has been satisfied from the Western perspective, it may not fully address the impact of the DNNP on Indigenous inherent and treaty Rights as they are understood today. OPG endeavors to continue to work with Indigenous Nations and communities to appropriately identify the Rights impacted by the Project and to achieve feasible mitigation measures and/or accommodation. OPG has been having discussions with Hiawatha FN regarding to better understand and work to address their concerns about potential environmental impacts including consideration for augmented monitoring. Reports and detailed summary of information on environmental studies requested by HFN were provided by OPG.	CNSC staff have reviewed the EA, OPG's EIS Review, the updated PPE, as well as relevant supporting documentation. CNSC staff expect no significant residual adverse environmental effects from the deployment of up to four BWRX-300 reactors, provided the mitigation measures identified in the EA are implemented, as required by OPG's EA follow-up program. CNSC staff also conclude that OPG has adequately assessed changes to baseline environmental conditions for environmental components assessed in the EA. CNSC staff have acknowledged Hiawatha FN's concern that any impacts on the environment, even with mitigation measures applied, represents a potential impact on Hiawatha FN's Rights. CNSC staff are committed to working collaborative with Hiawatha FN to conduct a RIA for the DNNP Licence to Construct application . The goal of the RIA will be to gather available information, analyze potential impacts to Rights based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified	CNSC staff's view is that the concerns regarding impacts to the environment have and will continue to be addressed through the responses and commitments of OPG and CNSC staff, to the extent possible within the CNSC's mandate and regulatory requirements. Additionally, CNSC staff's view is that the concerns around impacts to Treaty Rights will continue to be discussed and addressed through the collaborative RIA process, the full assessment and

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	potential and often real impacts to Inherent, Aboriginal and Treaty Rights.				impacts in order to make a collaborative recommendation to the Commission about potential impacts on Rights from the DNNP. CNSC staff are committed to providing funding and support for an Indigenous Knowledge and Land Use studies with Hiawatha FN and other interested WTFN. The results of these studies could then help inform an adaptive management approach to OPG's EA follow-up monitoring program, which will ensure the DNNP project and related activities, should it proceed, would be protective of Rights and interests. Additionally, CNSC staff are aware that OPG is working with Hiawatha FN and other interested WTFN to support an Indigenous Knowledge and Land use study. OPG has committed to continuing to make updates to their environmental protection program, as additional Indigenous Knowledge is shared. CNSC staff confirmed that OPG collaborated with Hiawatha FN to better understand their concerns regarding potential impacts on the environment. CNSC staff are aware that OPG has been engaging Hiawatha FN on permits of interest, including the Endangered Species Act permit. CNSC staff are aware that OPG has agreed to undertake recommendations made by Hiawatha FN and work with them to create and implement monitoring plans, including related to bats. CNSC staff will continue to monitor the OPG's Indigenous engagement activities, including with regards to monitoring and follow-up measures.	conclusions will be submitted to the Commission prior to the Licence to Construct Part-2 hearing. The RIA will include information, perspectives and recommendations from both CNSC staff's and Hiawatha FN's perspectives

A.4 Issues Tracking Table for Saugeen Ojibway Nation (SON) with respect to the Darlington New Nuclear Project (DNNP)

Note – CNSC staff shared this table with SON for their review on February 29, 2024. On March 12, 2024, SON informed the CNSC that they decided not to provide written feedback on this document but would instead discuss questions or concerns at meetings with CNSC staff. CNSC staff shared an updated version of the table with SON on May 23th, 2024 and SON provided written feedback on June 7, 2024.

ID #	**Concern or issue**	**Theme**	**Relevant Correspondence** (see Appendix B for details)	**OPG Response**	**CNSC Response**	**Status of Issue or Concern**
SON #1	The SON commented that the EA fails to capture the implications of the DNNP as the first grid scale SMR in Canada and are of the opinion that adequate assessment of the project can only be accomplished through a full Impact Assessment or Strategic and Regional Assessment under the Impact Assessment Act, 2019. The SON also note their intent to request that the DNNP, or commercial launch of SMR technology that is represented by the DNNP, be designated for a strategic and regional assessment.	Strategic Assessment of SMRs	April 3, 2023 SON comments November 28, 2023 CNSC response to SON comments	The Environmental Assessment conducted under Canadian Environmental Assessment Act remains valid and has no expiry date. Impact Assessments only apply to projects initiated after the Impact Assessment Act came into effect. The IAA does not require projects that have previously been assessed under CEAA to be re-evaluated under the IAA.	The DNNP EA was conducted and approved under the Canadian Environmental Assessment Act of 1992, which was the governing legislation at the time of the assessment. Given that a decision was rendered on this proposed project under the former Act, the project is not subject to the Impact *Assessment Act* (IAA) of 2019. Strategic Assessments under the IAA examine how the development or refinement of strategic-level initiatives, including policies, plans and programs, or issues could help facilitate the conduct of project-level Integrated Impact Assessments. Regional Assessments inform the planning and management of cumulative effects and inform project Integrated Impact Assessments. As per the IAA, the Minister of Environment may establish a committee—or authorise the Impact Assessment Agency—to conduct a strategic or regional assessment (as per sections 92, 93, and 95 of the Impact Assessment Act). The CNSC does not have the regulatory authority to initiate such an assessment under the NSCA or the IAA. The DNNP EA process resulted in a decision that determined the deployment of up to four large-scale reactors would not result in adverse environmental effects provided mitigation measures were properly implemented. Further, as noted as part of the Joint Review Panel's recommendations, the Commission will need to determine whether the existing environmental assessment is applicable to the reactor technology selected for the project. CNSC staff are conducting a thorough technical review of OPG's proposal, to ensure that it is safe for humans and the environment. CNSC staff note that the Commission's Record of Decision Record of Decision – Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP	CNSC staff's view is that these concerns have been addressed to the extent possible within the CNSC's mandate and regulatory requirements. CNSC staff note the Impact Assessment Act does not apply, as this project has already undergone an Environmental Assessment under the former Canadian Environmental Assessment Act of 1992. CNSC staff are aware that SON submitted a request for strategic and Regional Assessment for Small Modular Reactors to the Minister of Environment and Climate Change Canada and that this is an outstanding concern and request for SON. CNSC staff remain committed to discussing SON's broader concerns

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					Environmental Assessment (Paragraph 210) acknowledges SON's request. The Commission noted that "The Commission's obligation to determine the applicability of the EA to the chosen technology in this matter is separate and distinct from the request put forward by SON to the Minister, and any impending decision by the Minister in relation to that request does not, and should not, affect the determination being made by the Commission." CNSC staff are also committed to meaningful and ongoing consultation with Indigenous Nations and communities to address concerns and questions arising from the DNNP project including SON.	regarding nuclear development in their territory.
SON #2	The SON are concerned about potential impacts to their Rights from the transportation and storage of waste from the DNNP at the Western Waste Management Facility (WWMF) located in their territory. The SON are concerned that they have only been considered an Indigenous Nation that has expressed an interest in the project, rather than an Indigenous Nation with potential impacts to their constitutionally protected Rights. The SON commented there has not been adequate analysis of the impacts of these new sources of waste. The EA does not take into account the impacts of expanding the different waste generation from the SMR at DNNP. The WWMF is identified as the preferred recipient for radioactive waste for the DNNP, yet there is no assessment of the impact of the increased amounts in both radioactivity and volume on the environment (or on the operating licence) of the WWMF. SON are concerned that recommendations #52 and #53 from the Joint Review Panel (JRP) are not being honored. The SON are concerned that launching a small modular reactor (SMR) industry in Canada would radically impact plans for radioactive	Waste Management	April 3, 2023 SON comments November 28, 2023 CNSC response to SON comments April 3, 2024 email from SON April 4, 2024 CNSC response email	Through discussions with OPG and from information provided by OPG in their Indigenous Engagement Report, CNSC staff are aware that OPG has been discussing and engaging with the SON to better understand, respond to and work to addressing their concerns related to waste management. OPG recognizes the importance of sharing plans for the DNNP waste storage, transportation and management and have begun to hold meetings and to offer tours of existing waste facilities to initiate the education process. We recognize this as a common concern among many nations and will engage on this subject as plans are developed and information become available. OPG has communicated with SON the plans for DNNP waste management: high-level waste remains at site and L&ILW will remain at site or transported to a licenced facility and would not be stored in the SON territory.	As part of the Joint Review Panel Environment (JRP) Assessment process for the DNNP, the Panel reviewed OPG's plans for the management of spent fuel and low and intermediate-level waste and determined whether OPG's plans will result in significant residual effects on the human environment after mitigation measures are applied. The Panel concluded that radioactive and used fuel waste is not likely to result in significant adverse environmental effects, considering the implementation of controls and measures required under the CNSC regulations for radioactive waste management. The Panel also issued two recommendations and OPG states in its commitments report that OPG remains committed to implementing the recommendations from the JRP for waste management (DNNP Commitments Report, NK054-REP-01210-00078), D-C-9.1). CNSC staff are tracking this commitment and will only close the commitment if OPG has demonstrated they have adequately addressed the recommendation from the Panel. OPG has not yet made a decision about where waste generated by the DNNP will be stored and managed, should it proceed, and that is not within the scope of the decision to be made by the Commission on the applicability of the EA	CNSC staff are of the view that this concern will be addressed through the responses provided by OPG and CNSC. CNSC staff are committed to ongoing discussions, engagement and consultation regarding solid radioactive wastes, OPG's nuclear waste management program and the potential impacts to SON's Rights at each licensing stage, should the project proceed. CNSC staff are aware that SON disagrees with the CNSC's view on this issue. SON's view is that their concern has not been meaningfully considered or addressed. SON have

ID #	Concern or issue	Theme	Relevant Correspondence (see Appendix B for details)	OPG Response	CNSC Response	Status of Issue or Concern
	waste management, storage, and disposal in their territory moving forward. SON does not accept the CNSC's position that planning for waste management will be considered at a licence to operate stage.			It is OPG's understanding that SON are aware there are no plans for DNNP waste to be shipped and stored at WWMF. OPG remains committed and open to having discussions with SON regarding the plans for DNNP waste management and is actively working toward resuming an open, regularized conversation.	or with regards to the Licence to Construct application, should the project proceed. No nuclear waste will be generated from the construction of the DNNP, as there is no licensed activity in the construction licence that permits nuclear materials to be on-site. OPG will be required to characterise the nuclear wastes, identify the waste streams, handling requirements and hazards, transportation and storage locations in the Licence to Operate application phase, should the DNNP proceed. CNSC staff expect OPG to be actively working on the nuclear Waste Management program for the DNNP, which would include engaging with Indigenous Nations and communities, including SON. CNSC staff also note that the Commission's Record of Decision – Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment (Paragraph 211) indicates "As a waste owner, OPG is responsible for developing and implementing solutions to safely and securely manage its waste. It is the Commission's expectation that OPG will work collaboratively with potentially impacted Indigenous Nations and communities, including SON, in developing and implementing any such solutions, in accordance with applicable regulatory requirements." CNSC staff continue to encourage OPG to work with SON to meaningfully address the SON's concerns with respect to radioactive waste management at the DNNP. As well, CNSC staff remain open to working with the SON to address concerns, including having dedicated discussions with the SON on this topic.	indicated that the plan for the storage of radioactive waste is a fundamental consideration and is not a matter to be considered at a later date. SON also notes that discussions are not currently occurring with OPG about the plans for DNNP waste management. CNSC staff note that further information and updates on this issue will be provided in CNSC staff's supplemental submission and future licensing stages of the DNNP, should the project proceed.
SON #3	The SON raised concerns about the potential for the soil and lands that are being worked on as part of the Licence to Prepare Site (LTPS) to be contaminated.	Soil Quality	November 29, 2023 CNSC response email	OPG's Environment Health and Safety Managed Systems includes the management of contaminated lands. The DNNP Environmental Management and Protection Plan, which includes a section on soil and hazardous waste management,	Currently there is no expectation that any of the lands that are being worked on as part of the Licence to Prepare Site (LTPS) are contaminated. OPG has performed soil characterization studies in support of the licence that was issued and radiological contamination is not anticipated.	CNSC staff are of the view that this issue has been and will continue to be addressed by the CNSC and OPG, as

ID #	Concern or issue	Theme	Relevant Correspondence (see Appendix B for details)	OPG Response	CNSC Response	Status of Issue or Concern
				and the DNNP Site-Specific Soil Management Plan have been prepared to allow effective management of soil at DNNP lands. In 2021, a comprehensive soils characterization program was completed prior to site preparation activities to support project planning and development of the above-noted plans.	In the event that unexpected contamination is discovered during site preparation for the DNNP, CNSC staff would be notified if the contamination is in excess of the prescribed limits. OPG is required to adhere to the *Radiation Protection Regulations* at all times, including during site preparation activities, and these regulations specify that notification must occur if contamination is found "above the exemption quantity" found in the *Nuclear Substances and Radiation Devices Regulations.* Additionally, in general, the *Nuclear Safety and Control Act* subsection 45(a) require that any person that identifies that a place or vehicle is contaminated in excess of the prescribed limits (in this case, the exemption quantities in the *Nuclear Substance and Radiation Devices Regulations*) must immediately notify the CNSC. From there, the CNSC would be able to share any notification received with the SON, for their information. CNSC staff also expect that OPG will continue to maintain open lines of communication with the SON and would also notify the SON of the discovery, should it occur.	described in the response columns.
SON #4	The SON are concerned about the Government and industry's promotion of nuclear energy. Additionally, the SON are concerned about streamlining the regulation of SMRs, including that SMRs with a thermal capacity of 200 MWth or less are exempted from the Impact Assessment Act "Project List." Moreover, new reactors with the combined thermal capacity of up to 900 MWth are also exempted if located within the licensed boundaries of an existing Class IA facility. The SON submits that regulatory oversight should be increased rather than diminished when a proponent is proposing to place SMRs next to existing CANDU reactors. Such proximity raises important considerations that should be addressed, such as how the modular units would share support systems between themselves as well as with existing CANDU reactors. As identified during the Fukushima	Regulatory requirements	April 3, 2023 SON comments November 28, 2023 CNSC response to SON comments	Not applicable	The CNSC does not promote nuclear energy but rather the CNSC's mandate is to regulate the use of nuclear energy and materials to protect health, safety, security and the environment; to implement Canada's international commitments on the peaceful use of nuclear energy; and to disseminate objective scientific, technical and regulatory information to the public. The EIS Review report reviews the applicability of the deployment of up to four BWRX-300 reactors to the predictions made in the EIS and determines whether those predictions remain valid. However, OPG's Licence to Construct application is for a single BWRX-300 reactor. Should the CNSC receive an application for more units, analysis regarding these types of issues such as common, shared, systems will be conducted. Joint Review Panel (JRP) Recommendation # 63 goes into greater detail about multi-unit accidents and CNSC staff review of this aspect are ongoing as part of the OPG Licence to Construct application review. JRP #63 is still	CNSC staff are of the view that the concerns have been addressed within the CNSC's mandate and regulatory requirements.

ID #	Concern or issue	Theme	Relevant Correspondence (see Appendix B for details)	OPG Response	CNSC Response	Status of Issue or Concern
	nuclear disaster, having many units at a single site can have unexpected consequences, such as common mode failures impacting the operations and safety of neighbouring plants.				open, pending review during the Licence to Construct application process. CNSC staff's understanding at this time is that OPG does not intend to have a connection between the existing Darlington NGS (CANDU units) for critical systems or infrastructure and the BWRX-300 is intended to be a stand-alone system. Lessons learned from Fukushima were considered in the Environmental Assessment (EA) and CNSC's environmental reviews are risk-informed taking into consideration the novel features of the BWRX-300. CNSC staff concluded the EA remains valid for OPG's chosen technology for the DNNP.	
SON #5	The SON has concerns regarding the source of SMR fuel, including for the DNNP, noting that Canada does not produce lightly enriched fuel. The SON raised concerns about nuclear criticality safety concerns related to the use of lightly enriched uranium as the nuclear fuel. The fact that lightly enriched uranium can go critical in normal water—unlike CANDU fuel—means that CNSC will have to ensure more safety controls are in place. That some of these controls include the use of neutron absorber in the rack design and borated water, which are cause for concern to the SON from a human safety and environmental protection point of view. These safety concerns will impact the entire fuel cycle from production, to transportation, to storage and disposal. These criticality issues and concerns are far different from past rhetoric about the added safety of CANDU reactors due to the use of natural uranium as fuel.	Fuel	April 3, 2023 SON comments November 28, 2023 CNSC response to SON comments	OPG evaluated the source and commercial availability of the fuel for the BWRX-300 (GNF2), as part of the technology selection process. From a safety perspective BWR plants (which use LEU) have an excellent safety record throughout the world. The industry has proven that LEU fuel can be effectively managed. GE-H designs reactors like the BWRX-300 and has decades of experience in the out of core criticality safety expectations. The CNSC imposes out-of-core criticality requirements in REGDOC 2.4.3 specifically dealing with the concern of using low enriched uranium, which OPG/GE-Hitachi will demonstrate compliance with per the licence requirements.	The BWRX-300 proposes to use a variation of GEH's GNF-2 fuel assemblies, which CNSC staff note are currently safely used around the world. It is true that the BWRX-300 will use lightly-enriched uranium as fuel, and as such, OPG must comply with the requirements of REGDOC-2.4.3 – *Criticality Safety*, including the requirements for neutron absorption and criticality monitoring in the spent fuel pools. The spent fuel pool is a closed system, monitored carefully for overall water chemistry as well as for any criticality considerations. Operations with borated water and neutron poisons added to rack storage is well-understood and carried out safely in BWR and PWR nuclear plants across the world. The amount of boron and poisons added to the water is enough to suppress criticality and is not expected to be hazardous to the environment or human health. OPG will be required to inform their workers of any environmental hazards of working near or with hazardous materials, and workers are obligated to use all precautionary equipment provided by the potential licensee, as is currently required by *General Nuclear Safety and Control Regulations*. The level of radioactivity in these types of spent fuel rods is different than existing CANDU-style fuel bundles. Should this project proceed, OPG will be required to develop and	CNSC staff are of the view that the concerns have been addressed within the CNSC's mandate and regulatory requirements for a Licence to Construct application. CNSC staff are committed to ongoing discussions regarding nuclear fuel at each licensing stage, should the project proceed.

ID #	Concern or issue	Theme	Relevant Correspondence (see Appendix B for details)	OPG Response	CNSC Response	Status of Issue or Concern
					implement waste management procedures that are specific to the BWRX-300 fuel and CNSC staff will verify that these procedures meet regulatory requirements and include international best practices.	
SON #6	The SON raised concerns about how the nuclear sector is adopting the *United Nations Declaration on the Rights of Indigenous Peoples Act* The SON note that CNSC and the Federal government must honour its commitment to ensuring Indigenous peoples have the right of free, prior, and informed consent prior to the storing or disposing of radioactive waste on their territories by ensuring consent is secured before the launching of the SMR industry, not after.	UNDRIP	April 3, 2023 SON comments	Through discussions with OPG and from information provided by OPG in their Indigenous Engagement Report, CNSC staff are aware that OPG has been discussing and engaging with the SON to better understand, respond to and work to addressing their concerns regarding the storage of waste in their territory. OPG recognizes the importance of UNDRIP/FPIC, as affirmed by its recognition of Call to Action #92. OPG understands that the government of Canada has introduced a framework to implement UNDRIP in Canadian law through the United Nations Declaration on the Rights of Indigenous Peoples Act and OPG continues to closely monitor all guidance and developments arising from that process.	CNSC staff note that CNSC's own consultation approach, and Indigenous engagement requirements for proponents as per REGDOC-3.2.2: *Indigenous Engagement*, are designed with the goal of striving to achieve consensus with potentially impacted Indigenous Nations and communities by meaningfully addressing concerns and potential impacts to Rights and interests, and bringing forward the views of Indigenous Nations and communities to the Commission, to help inform their decision-making process. The proponent should work with potentially impacted Indigenous Nations and communities to develop a specific approach to achieving consent, as appropriate. Potentially impacted Indigenous Nations or communities that wish to express their views directly to the Commission regarding their process and position on their FPIC in relation to the proposed DNNP License to Construct Application, are encouraged to use the opportunity through their written and/or oral intervention. This will help assist and inform the Commission's decision-making for this matter. Additionally, CNSC is supporting whole-of-government work underway related to the UNDA Action Plan released in 2023. The action plan measure 32, speaks to developing guidance for implementing Free, Prior and Informed Consent for natural resource related decisions, which is being led by Natural Resources Canada. In addition, CNSC staff are actively working on updating guidance and requirements for proponents and licensees with regards to Indigenous engagement through proposed updates and amendments to REGDOC-3.2.2:Indigenous engagement, which include changes to bring the guidance and requirements in line with the principles of UNDA. CNSC staff encourage the SON to	CNSC staff and SON will continue to discuss how the CNSC is implementing UNDA, including FPIC, to better understand and address SON's concerns and perspectives.

ID #	Concern or issue	Theme	**Relevant Correspondence** (see Appendix B for details)	OPG Response	CNSC Response	Status of Issue or Concern
					be involved in the consultation process for the update to REGDOC-3.2.2.	

A.5 Issues Tracking Table for Six Nations of the Grand River (SNGR) with respect to the Darlington New Nuclear Project (DNNP)

Note – On February 29, 2024, CSNC staff provided this issues tracking table to Six Nations of the Grand River for their review and feedback. CNSC staff followed up with Six Nations of the Grand River on March 27, 2024. No response was received.

ID #	Concern or issue	Theme	OPG Response	CNSC Response	Status of Issue or Concern
SNGR #1	SNGR raised concerns that Ontario Power Generation (OPG) was only considering impacts to species at risk in their assessment of potential impacts from the DNNP. SNGR indicated that OPG should consider species that are culturally important to Indigenous Nations and communities or that are used for subsistence when considering potential impacts and conducting environmental monitoring.	Indigenous Knowledge	In OPG's Environmental Monitoring and EA Follow Up Plan (EMEAF), OPG commits to working with Indigenous Nations and communities to incorporate Indigenous and Traditional knowledge, where available, in order to further understand the potential impacts of the project and strengthen assessment and decision-making. In the EMEAF, OPG notes that they endeavour to apply Indigenous and Traditional knowledge into the framework for this EMEAF Plan as well. OPG welcomes all information that can be used to provide insight and continues discussion with Indigenous Nations and communities to better integrate Indigenous and Traditional knowledge into the project.	CNSC staff note that additional species are considered in OPG's assessment of potential impacts, not just Species at Risk. CNSC staff encouraged SNGR to comment on the OPG's EIS review and PPE Documents. CNSC staff also shared the comments with OPG to consider and work to address. CNSC staff provided comments from SNGR and other Indigenous Nations and communities to the CNSC's technical specialists to consider when conducting the assessments of OPG's documentation. CNSC encourages OPG to continue to engage on the EMEAF Plan and incorporate Indigenous Knowledge where available.	CNSC staff are of the view that this issue has been and will continue to be addressed by the CNSC and OPG, as described in the response column.
SNGR #2	SNGR expressed concern that OPG had not responded to questions about OPG's facilities, including the DNNP	Proponent led Indigenous Engagement	OPG has included SNGR in the list of Indigenous Nations and communities to provide information and updates on related to the DNNP. OPG also signed a relationship agreement with SNGR to ensure ongoing regular engagement on various topics of interest.	CNSC staff confirm that OPG has been open to discussing the DNNP and other areas of interest with SNGR. CNSC staff are supportive of the relationship agreement that OPG has signed with SNGR. From discussions with OPG and SNGR, CNSC staff understand that interactions have been positive and encourages OPG to continue to engage, communicate and respond to questions and information requests from SNGR. CNSC staff are of the view that SNGR concerns around OPG engagement and responsiveness have and will continue to be addressed through their relationship agreement. Additionally, CNSC staff will continue to monitor OPG's engagement through regular meetings and updates to the IER, as well as CNSC staff's regular communications and engagement with SNGR.	CNSC staff are of the view that this issue has been and will continue to be addressed by the CNSC and OPG, as described in the response column.

A.6 Issues Tracking Table for Métis Nation of Ontario (MNO) with respect to the Darlington New Nuclear Project (DNNP)

Note – CNSC staff shared this table with MNO on February 29, 2024 for their review and feedback. MNO confirmed on March 22, 2024 that they did not have any additional comments or concerns

ID #	Concern or issue	Theme	OPG Response	CNSC Response	Status of Issue or Concern
MNO #1	MNO expressed concerns about what the security considerations for this technology are and who is responsible for ensuring security.	Security	The OPG Security Program supports OPG's need to manage residual risk to the public created by the operation of its facilities, protect assets and respond to emergencies that may impact operations and the public. Key elements of this program include maintaining compliance with legislative requirements, while minimizing the adverse impact on staff and operations. The objective of the program is to establish a state of security readiness to ensure safe and secure operation of OPG stations and facilities. OPG's Security program ensures the security of OPG's assets through physical and administrative security measures utilizing equipment, personnel, and procedures. The activities authorized under the License to Prepare Site for DNNP have limited nuclear security impact. The security program for the DNNP during the site preparation phase is focused primarily on ensuring that the selected site remains suitable for a new nuclear development from a security perspective, mitigating risk to existing Darlington Nuclear facilities, and protecting prescribed information. The program ensures security readiness and maximizes response capability to, contain, mitigate, and terminate security events. While several facets of OPG's security programs are regarded as best practices among private sector organizations, OPG continues to build strength in identifying areas for improvement by tackling adverse trends and processes to drive continuous improvement efforts. On an annual basis, OPG reviews its Memorandum of	Canada has rules about non-proliferation and international obligations that must be met, based on the Treaty on the Non-Proliferation of Nuclear Weapons. When licensees possess nuclear materials, they must ensure that they maintain security and support Canada's international obligations as well. The licensees implement the non-proliferation treaty and the CNSC enforces it. Additionally, the International Atomic Energy Agency conducts inspections at least once a year to verify what the licensees and Canada is reporting is accurate. The BWRX-300 reactor fuel uses slightly enriched fuel, but Canada does not produce enriched fuel at this time. Canada produces fuel for CANDU reactors from uranium mines in northern Saskatchewan. Then fuel pellets are created in Peterborough and Port Hope, which are then used in Canadian reactors like the Darlington NGS, as well as shipped to different countries that also use the CANDU technology. For the DNNP BWRX-300, it is likely that OPG will have uranium sent to other countries that currently have the technology and facilities to enrich the uranium where the fuel can then be enriched and imported to the Darlington site, inspected and used in the reactor, following all relevant CNSC and international regulations, treaties and obligations.	CNSC staff are of the view that this concern has been and will continue to be addressed through the responses provided by OPG and CNSC staff described in this table.

ID #	Concern or issue	Theme	OPG Response	CNSC Response	Status of Issue or Concern
			Understanding with Durham Region Police Service. This memorandum defines mutual responsibilities and provides a strong foundation for continued productive and integrated working relationships between Durham Region Police Service and OPG. As well, Nuclear Security continues to maintain excellent working relationships with off-site emergency response organizations. Improvements include several strategic initiatives aimed at implementing innovation and technology opportunities. These include, mitigating security impairments with the use of portable camera systems, patrol vehicle fleet electrification pilot, and security clearance system electronic application upgrade. Potential risks are identified and analyzed through the preparation of a Site Specific Threat and Risk Assessment (SSTRA) which considers physical site characteristics that could impede the development and implementation of current and future adequate security measures. Additional threat and risk assessments (TRAs) will be conducted at each phase of the project with security measures evaluated against these TRAs to ensure credible threats are mitigated. OPG has a mature and robust security program in place at the DN site. Details of OPG's Darlington security program are fully described in the DNGS Security Report submitted to the CNSC.		
MNO #2	The MNO raised concerns about potential impacts from the project on the lake water quality and fish. The MNO expressed concerns about whether Ontario Power Generation (OPG) and the CNSC would monitor the impacts of the project.	Environment	OPG has provided information to the MNO regarding potential environmental impacts, proposed mitigation and monitoring activities in relation to the DNNP. OPG has had meetings with the MNO where impacts to the environment from the DNNP	CNSC staff note that OPG collects collect water, fish and air samples through their monitoring program at the Darlington Nuclear Generating Site. Specifically, for DNNP, OPG collected baseline information in 2009 for the original Environmental Assessment. CNSC staff noted that OPG has been updating their	CNSC staff are of the view that this concern has been and will continue to be addressed through the responses provided by

ID #	Concern or issue	Theme	OPG Response	CNSC Response	Status of Issue or Concern
	The MNO has requested additional engagement and information from OPG on topics such as the bank swallow nesting habitat, terrestrial habitat, socio-economic benefits, physical and cultural heritage resources, surface water environment and climate change.		have been discussed. OPG has also had discussions with the MNO about potential candidates within the MNO Region 8 membership for OPG's Indigenous Opportunities Network. The MNO also participated in a site visit to Darlington in December 2022. OPG notes that water may be discharged only after it is analyzed and confirmed to be well below the regulatory limits. Additionally, the effluent discharge line is equipped with a radiation monitor and is automatically isolated if unacceptable radioactivity is detected. Furthermore, OPG carries out an Environmental Monitoring Program which samples for radioactivity in the environment to confirm that doses received by the public and ecological receptors remain very low. Results of the Environmental Monitoring Program, as well as the station's radiological releases, are reported to the regulator and to the public and will be shared with the Indigenous Nations and communities.	baseline data, collecting a series of samples to show whether or not the baseline has changed since 2009. In addition, if the DNNP is approved, OPG will be required to have an EA follow up and monitoring program. OPG has committed to ensuring that their follow up and monitoring program is based on current best practices, including reflecting Indigenous Knowledge and perspectives, as well as including Indigenous Nations and communities in the sampling and monitoring activities. In addition, CNSC staff are committed to continuing to engage and include the MNO in the CNSC's Independent Environmental Monitoring Program in relation to the Darlington site.	OPG and CNSC staff described in this table.
MNO #3	The MNO raised concern that OPG's documentation lacked a description of, or commitment to, continued engagement with the MNO Region 8. The MNO recommends that future documents or reports reference the ongoing relationship with the MNO Region 8 be reported.	Indigenous Consultation and Engagement	In OPG's Indigenous Engagement Report for the DNNP, the Métis Nation of Ontario Region 8 is included in their list of indigenous Nations and communities who have expressed an interest in the DNNP. According to OPG's Indigenous engagement report, OPG continues to provide information, relevant notifications and have meetings with the MNO to discuss their interests and concerns including those related to the DNNP.	CNSC staff have frequently followed up with the MNO and attended monthly meetings to offer to meet to discuss the DNNP at key regulatory stages and to provide more information about the CNSC conclusions on the review. The MNO has not requested additional DNNP meetings at this time. CNSC staff have shared CNSC documents with MNO, including this table and sections of the Consultation Report, for MNO's review to ensure their views are accurately reflected. The CNSC requires proponents to engage with Indigenous Nations and communities as part of the regulatory process for a proposed project, as outlined in REGDOC-3.2.2: Indigenous engagement. In addition, the CNSC encourages licensees to engage with interested Indigenous Nations and communities as part of their Public	CNSC staff are of the view that this concern has been and will continue to be addressed through the responses provided by OPG and CNSC staff described in this table.

ID #	Concern or issue	Theme	OPG Response	CNSC Response	Status of Issue or Concern
				Information and Disclosure Program on a regular basis, whether or not there is an ongoing regulatory process for a project. The CNSC also meets regularly with the MNO, including the MNO Region 8, as per the CNSC-MNO Terms of Reference for Long-Term Engagement. CNSC staff note that the Commission's Record of Decision – Ontario Power Generation – Applicability of the BWRX 300 Reactor to the DNNP Environmental Assessment (Paragraph 240) acknowledges that "OPG's Darlington New Nuclear Project is expected to have many phases, beyond the current determinations directed by the Government of Canada's response to the JRP Recommendation #1. The Commission expects both CNSC staff and OPG to continue their respective consultation and engagement activities over the lifecycle of this Project and any subsequent applications to the Commission with all interested Indigenous Nations and communities and their representatives."	

Appendix B Key Correspondence with Indigenous Nations and Communities regarding the DNNP

B.1 General Correspondence with Indigenous Nations and communities

From:	DeCoste, Laura
Bcc:	dmowat@alderville.ca; consultation@alderville.ca; chiefcarr@hiawathafn.ca; tcowie@hiawathafn.ca; sdavison@hiawathafn.ca; bfnchief@chimnissing.ca; consultations@chimnissing.ca; donna.bigcanoe@georginaisland.com; natasha.charles@georginaisland.com; jl.porte@georginaisland.com; tedw@ramafirstnation.ca; shardayj@ramafirstnation.ca; rdonm@mbq-tmt.org; consultation@mbq-tmt.org; lisam@mbq-tmt.org;
Subject:	Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022
Sent:	2022-05-13 8:23:00 AM

Hello,

This email is to inform you that Ontario Power Generation (OPG) is expected to submit an application to the Canadian Nuclear Safety Commission (CNSC) for a licence to construct a grid-scale Small Modular Reactor (SMR) at the Darlington New Nuclear Project (DNNP) site in **Fall 2022**. OPG announced in December 2021 that they have selected the GE Hitachi BWRX-300 SMR technology.

The DNNP site is adjacent to the existing Darlington Nuclear Generating Station, located along the north shore of Lake Ontario, in the Municipality of Clarington. OPG holds a Nuclear Power Reactor Site Preparation Licence for the DNNP to 2031. An OPG-CNSC administrative protocol for the pre-construction and construction licence application is in place to allow for open and transparent processes. The protocol is available on the CNSC website located here: https://www.nuclearsafety.gc.ca/eng/pdfs/Protocols/December-2021-Protocol-Between-Ontario-Power-Generation-and-CNSC-Darlington-New-Nuclear-Project-eng.pdf

The CNSC will be offering participant funding to support involvement in the regulatory review process, including submission review, the consultation and engagement process and the Commission hearing. It is anticipated that the Commission hearing will be held by the end of 2024, however these dates have yet to be determined. More information about participant funding and the Commission hearing will be provided in the coming months.

Opportunity for early engagement:

CNSC staff are available to organize a meeting anytime to provide additional details about OPG's potential licence application submission, the regulatory process, information about timelines, answer questions, and discuss how you would like to be consulted moving forward. CNSC staff are initiating engagement prior to receiving OPG's licence application as we are committed to collaborating to develop a mutually agreeable consultation and engagement process early on in the regulatory process with you and your Nation.

Please let me know if you are interested in having this meeting or have any questions.

Thank you,
Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	DeCoste, Laura
To:	lisam@mbq-tmt.org; consultation@mbq-tmt.org;
Subject:	FW: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022
Sent:	2022-06-02 1:25:00 PM

Good afternoon!

I am following up on the email below and voicemail from today regarding the Darlington New Nuclear Project. Ontario Power Generation (OPG) is expected to submit an application to the Canadian Nuclear Safety Commission (CNSC) for a licence to construct a grid-scale Small Modular Reactor (SMR) in **Fall 2022**.

CNSC staff are available to meet to discuss the potential licence application submission, the regulatory process, information about timelines and discuss how you would like to be consulted moving forward.

Please let me know if you are interested in having a meeting on this topic and I would be happy to organize a time. Don't hesitate to email or call me if you have any questions!

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

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Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: DeCoste, Laura
Sent: May 13, 2022 8:24 AM
Subject: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022

Hello,

This email is to inform you that Ontario Power Generation (OPG) is expected to submit an application to the Canadian Nuclear Safety Commission (CNSC) for a licence to construct a grid-scale Small Modular Reactor (SMR) at the Darlington New Nuclear Project (DNNP) site in **Fall**

2022. OPG announced in December 2021 that they have selected the GE Hitachi BWRX-300 SMR technology.

The DNNP site is adjacent to the existing Darlington Nuclear Generating Station, located along the north shore of Lake Ontario, in the Municipality of Clarington. OPG holds a Nuclear Power Reactor Site Preparation Licence for the DNNP to 2031. An OPG-CNSC administrative protocol for the pre-construction and construction licence application is in place to allow for open and transparent processes. The protocol is available on the CNSC website located here: https://www.nuclearsafety.gc.ca/eng/pdfs/Protocols/December-2021-Protocol-Between-Ontario-Power-Generation-and-CNSC-Darlington-New-Nuclear-Project-eng.pdf

The CNSC will be offering participant funding to support involvement in the regulatory review process, including submission review, the consultation and engagement process and the Commission hearing. It is anticipated that the Commission hearing will be held by the end of 2024, however these dates have yet to be determined. More information about participant funding and the Commission hearing will be provided in the coming months.

Opportunity for early engagement:

CNSC staff are available to organize a meeting anytime to provide additional details about OPG's potential licence application submission, the regulatory process, information about timelines, answer questions, and discuss how you would like to be consulted moving forward. CNSC staff are initiating engagement prior to receiving OPG's licence application as we are committed to collaborating to develop a mutually agreeable consultation and engagement process early on in the regulatory process with you and your Nation.

Please let me know if you are interested in having this meeting or have any questions.

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	DeCoste, Laura
Bcc:	consultation@alderville.ca; JulieK@curvelake.ca; kaitlinh@curvelake.ca; francis@francischua.com; cassandreroydrainville@gmail.com; kayla@francischua.com; sdavison@hiawathafn.ca; Don@threefires.com; emily@threefires.com; tturoczi@scugogfirstnation.com; consultation@scugogfirstnation.com; natalya.garrod@threefires.com; sam@threefires.com; consultation@chimnissing.ca; danamonague@chimnissing.ca; jl.porte@georginaisland.com; consultation@ramafirstnation.ca; shardayj@ramafirstnation.ca; consultation@mbq-tmt.org; lisam@mbq-tmt.org; nicoles@mbq-tmt.org; JesseF@metisnation.org; ethanr@metisnation.org; lonnybomberry@sixnations.ca; dawnrussell@sixnations.ca; laurenjones@sixnations.ca; nativelandsltd@gmail.com; tanyahill-montour@sixnations.ca; tayler.hill@sixnations.ca; petergraham@sixnations.ca; rvanstone@sixnations.ca; Bethany Kuntz-Wakefield; manager.energy@saugeenojibwaynation.ca;
Subject:	Notification of CNSC Webinar: Darlington New Nuclear Project – Upcoming Licensing Review
Sent:	2022-10-20 11:50:00 AM

Hello,

The Canadian Nuclear Safety Commission is hosting webinars on November 15 (English) and November 22 (French), 2022 on the upcoming licensing review of the Darlington New Nuclear Project.
The purpose of this webinar is to:

- familiarize the public with the project and its activities
- discuss the CNSC's licensing process
- discuss OPG's licence application
- provide information on participant funding to review the following reports for the project: *Use of Plant Parameters Envelope to Encompass the Reactor Designs Being Considered for the Darlington Site* and *Darlington New Nuclear Project Environmental Impact Statement Review Report for Small Modular Reactor BWRX-300*
- answer questions about the project and the regulatory process

The webinars will take place from noon to 1:30pm. For more information and to register, please visit the CNSC website here: https://www.cnsc-ccsn.gc.ca/eng/stay-connected/get-involved/meet-the-nuclear-regulator/darlington-webinar.cfm

Let me know if you have any questions!

Thank you,
Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	DeCoste, Laura
Bcc:	consultation@alderville.ca; JulieK@curvelake.ca; kaitlinh@curvelake.ca; francis@francischua.com; cassandreroydrainville@gmail.com; kayla@francischua.com; sdavison@hiawathafn.ca; Don@threefires.com; emily@threefires.com; tturoczi@scugogfirstnation.com; consultation@scugogfirstnation.com; natalya.garrod@threefires.com; sam@threefires.com; consultation@chimnissing.ca; danamonague@chimnissing.ca; jl.porte@georginaisland.com; consultation@ramafirstnation.ca; shardayj@ramafirstnation.ca; consultation@mbq-tmt.org; lisam@mbq-tmt.org; nicoles@mbq-tmt.org; JesseF@metisnation.org; ethanr@metisnation.org; lonnybomberry@sixnations.ca; dawnrussell@sixnations.ca; laurenjones@sixnations.ca; nativelandsltd@gmail.com; tanyahill-montour@sixnations.ca; tayler.hill@sixnations.ca; petergraham@sixnations.ca; rvanstone@sixnations.ca; Bethany Kuntz-Wakefield; manager.energy@saugeenojibwaynation.ca;
Subject:	Notification of participant funding available to review documents for the Darlington New Nuclear Project
Sent:	2022-10-25 7:08:00 AM

Hello!

Ontario Power Generation (OPG) is proposing to construct a small modular reactor as early as 2028 in the Municipality of Clarington, Ontario. OPG currently holds a site preparation licence for the project and intends to submit an application this month to the CNSC for a licence to construct.

Funding is available to assist Indigenous Nations and communities, members of the public and stakeholders in reviewing 2 OPG documents related to the Darlington New Nuclear Project:

- Use of Plant Parameters Envelope to Encompass the Reactor Designs Being Considered for the Darlington Site
- Darlington New Nuclear Project Environmental Impact Statement Review Report for Small Modular Reactor BWRX-300

Funding is also intended to support the participation in workshops and/or meetings with CNSC staff regarding OPG's Darlington New Nuclear Project and the submission of comments to the CNSC. **The deadline to submit a completed participant funding application is December 2, 2022.**

A second stage of funding, to be announced at a later date, will assist with participation in the remainder of the regulatory process, including the review of Commission member documents and documents related to OPG's application for a licence to construct, and participation at the Commission hearing. For more information on the Participant Funding Program, go to http://www.nuclearsafety.gc.ca/eng/the-commission/participant-funding-program/opportunities/index.cfm

Please let me know if you have any questions or wish to discuss this further.

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	Cunningham, Amy
To:	KeithK@curvelake.ca; reception@curvelake.ca;
Cc:	JulieK@curvelake.ca; kaitlinh@curvelake.ca; francis@francischua.com; cassandreroydrainville@gmail.com; kayla@francischua.com; Eaton, Sarah; Rzentkowski, Bartek; Simon, Nicole; Janzen, Emily; Harpell, Heather; Levine, Adam; Zenobi, Adam; DeCoste, Laura; Ducros, Caroline; Jammal, Ramzi;
Subject:	CNSC Notice of OPG Application for a Licence to Construct a Reactor Facility for the Darlington New Nuclear Project
Sent:	2022-11-23 3:43:41 PM

Good afternoon,

Please find the attached letter of correspondence which is of interest to Chief Keith Knott.

This email will serve as confirmation of notification for this correspondence. In an effort to shrink our environmental footprint, CNSC will not be mailing a hard copy of this letter.

Please send your questions regarding this letter to the Director of Advanced Reactor Licensing Division: Sarah Eaton Sarah.Eaton@cnsc-ccsn.gc.ca.

Kindly,

Amy Cunningham
Administrative Assistant / Adjointe Administrative
Advanced Reactor Licensing Division / Division de l'autorisation des réacteurs avancés
Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire
amy.cunningham@cnsc-ccsn.gc.ca

Directorate of Advanced Reactor Technologies

UNCLASSIFIED
e-Doc 6920999
File 7.03.02

November 23, 2022

Chief Keith Knott
Curve Lake First Nation

Subject: Canadian Nuclear Safety Commission's Notice of Ontario Power Generation's Application for a Licence to Construct a Reactor Facility for the Darlington New Nuclear Project

Dear Chief Knott,

The purpose of this letter is to inform you that Ontario Power Generation (OPG) has submitted an application to the Canadian Nuclear Safety Commission (CNSC) for a Licence to Construct a reactor facility for the Darlington New Nuclear Project (DNNP). Information regarding the DNNP can be found on the CNSC website here.

Darlington New Nuclear Project:

The DNNP site is adjacent to the existing Darlington Nuclear Generating Station, located along the north shore of Lake Ontario, in the Municipality of Clarington. OPG currently holds a Nuclear Power Reactor Site Preparation Licence for the DNNP which expires in 2031. OPG is requesting a ten-year licence to construct one GE-Hitachi BWRX-300 Small Modular Reactor and its supporting infrastructure at the DNNP site. The GE-Hitachi technology is sized to generate 300 Megawatts electric using boiler water technology.

In 2009, the Minister of the Environment and President of the Canadian Nuclear Safety Commission appointed a Joint Review Panel to consider the DNNP under the *Canadian Environmental Assessment Act* (1992). The environmental assessment (EA) considered a range of reactor technologies with OPG's intention being that a specific technology would be selected in the future. OPG's effects assessment was documented in their Environmental Impact Statement (EIS) report (2009). In 2012, the Panel concluded that the proposed project was not likely to cause significant adverse environmental effects, provided the mitigation measures proposed and commitments made by OPG during the review, and the Panel's recommendations were implemented.

An outcome of the EA process was a requirement for OPG to demonstrate how the selected technology (BWRX-300) fits within the bounds of the completed EA.

OPG has submitted two documents to demonstrate whether the 2012 EA is applicable to the selected reactor technology. The documents are available on OPG's DNNP website here. CNSC staff are currently reviewing these documents and welcome comments from Indigenous Nations and communities. Please see the Participant Funding section below for more details on this opportunity.

Participant Funding Program

The CNSC is offering a participant funding opportunity to assist Indigenous Nations and communities, members of the public, and stakeholders in the review of two Ontario Power Generation documents: 1) *Use of Plant Parameters Envelope to Encompass the Reactor Designs being Considered for the Darlington Site* and 2) *Darlington New Nuclear Project Environmental Impact Statement Review Report for Small Modular Reactor BWRX-300*. Funding is also intended to support participation in workshops and/or meetings with CNSC staff regarding OPG's Darlington New Nuclear project (the project) and the submission of comments to the CNSC. The documents will be posted on the *Let's Talk Nuclear Safety* online consultation platform for public comment in late 2022.

Up to $150,000 in participant funding will be disbursed among all eligible applicants for the provision of new, distinctive and valuable information on OPG's environmental impact statement, plant parameters envelope, and related documentation. Applications for the first stage of funding are due **December 2, 2022**. A link to the notice for this participant funding opportunity is here.

A second stage of funding, to be announced at a later date, will assist with participation in the remainder of the regulatory process, including the review of Commission member documents and documents related to OPG's application for a licence to construct, and participation at Commission Proceedings. The CNSC will provide you with more information on funding amounts and application dates once this information is available.

If you have questions about the PFP, please contact the PFP Administrator at 1-613-415-2814, or by email at pfp@cnsc-ccsn.gc.ca.

Commission Hearing

The CNSC is currently assessing hearing options for OPG's application. CNSC staff will provide you with the official Notice of Hearing, further details about the public hearing and opportunities to participate once available.

As an Indigenous Nation and/or community with potential interest in this application, the CNSC is interested in hearing views you may have with respect to OPG's application, including any potential impacts to your Nation or community's Indigenous or Treaty rights. Find more information on how to intervene and on the CNSC's public hearing processes here.

Next Steps and Further Information

CNSC staff would like to meet with your community to provide additional details about OPG's licence application submission and discuss how you would like to be consulted moving forward. CNSC staff are committed to collaboratively developing a mutually agreeable consultation process. Please let us know if you are interested in discussing this topic and CNSC staff will be happy to organize a meeting.

If you have any questions relating to this licence application, please contact myself, Sarah Eaton, Director of Advanced Reactor Licensing Division at 343-548-2828 or by email at Sarah.Eaton@cnsc-ccsn.gc.ca.

If you wish to receive e-mail notifications when the CNSC website is updated, including notices for hearings, meetings and PFP funding opportunities, you can sign up to the CNSC mailing list by visiting this weblink and choosing the 'new subscriber' option.

Sincerely,

Sarah Eaton
Director
Advanced Reactor Licensing Division

c.c. J. Kapyrka, K. Hill, F. Chua, C. Roy-Drainville, K. Wright (Curve Lake First Nation)
B. Rzentkowski, N. Simon, E. Janzen, H. Harpell, A. Levine, A. Zenobi, L. DeCoste,
C. Ducros, R. Jammal (CNSC)

From:	DeCoste, Laura
Bcc:	consultation@alderville.ca; consultations@chimnissing.ca; danamonague@chimnissing.ca; jl.porte@georginaisland.com; consultation@ramafirstnation.ca; consultation@mbq-tmt.org; lisam@mbq-tmt.org; JulieK@curvelake.ca; kaitlinh@curvelake.ca;
Subject:	Darlington New Nuclear Project: The Canadian Nuclear Safety Commission is seeking feedback on 2 reports submitted by OPG
Sent:	2022-12-21 11:32:00 AM

Hello!

Ontario Power Generation (OPG) is proposing to construct a small modular reactor in the Municipality of Clarington, Ontario. OPG currently holds a site preparation licence for the project and has submitted an application to the Canadian Nuclear Safety Commission (CNSC) for a licence to construct.

The CNSC is currently soliciting feedback from Indigenous Nations and communities, individuals and interested groups on 2 documents submitted by OPG related to the Darlington New Nuclear Project (DNNP):

- *Use of Plant Parameters Envelope to Encompass the Reactor Designs Being Considered for the Darlington Site*
- *Darlington New Nuclear Project Environmental Impact Statement Review Report for Small Modular Reactor BWRX-300*

The deadline to submit your comments is **March 20, 2023**. To access the documents and submit comments, go to https://www.letstalknuclearsafety.ca/dnnp-pre-licensing-consultation.

Please let me know if you have any questions or concerns. We would also be happy to meet with your community to provide additional details about OPG's application and discuss how you would like to be consulted moving forward.

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	DeCoste, Laura
To:	danamonague@chimnissing.ca; consultations@chimnissing.ca;
Cc:	Darlington New Nuclear Project / Nouveau projet nucleaire de Darlington; Ducros, Caroline;
Subject:	Join the CNSC's workshop on April 4 to discuss Ontario Power Generation's Updated Plant Parameter Envelope and Environmental Impact Statement Review reports
Sent:	2023-02-16 4:42:00 PM

Hello!

Beausoleil First Nation is invited to join the Canadian Nuclear Safety Commission (CNSC), either in-person or online, on April 4th to discuss Ontario Power Generation's (OPG's) Darlington New Nuclear Project (DNNP). The focus will be on the following documents submitted to the CNSC as part of OPG's DNNP Licence to Construct application:

- Updated Plant Parameter Envelope Report
- Environmental Impact Statement Review Report

These documents were submitted by OPG to CNSC to demonstrate that the GE Hitachi BWRX-300 remains within the bounds of the approved environmental assessment. Particular attention will be given to the Indigenous Nations and communities, the public and stakeholder reviews of the documents. These documents are currently posted on the *Let's Talk Nuclear Safety* forum for review and comment until March 20, 2023.

The workshop will be a one day, hybrid event. Attendees will be welcome to join in-person at a location TBD in the Municipality of Clarington or online through Zoom, a virtual meeting platform. Registration is required.

Click here to register or follow the link below:
https://us06web.zoom.us/webinar/register/WN_j-vKAPb4QBSBC_DAMctqIA

In-person attendance
Date: Tuesday, April 4, 2023
Time: 9:00 a.m. to 4:00 p.m. (EST)
Location: Municipality of Clarington (exact location TBD and will be shared with registered participants prior to the event)

Online attendance
Date: Tuesday, April 4, 2023
Time: 9:00 a.m. to 4:00 p.m. (EST)
Platform: Zoom (link will be provided prior to the event)

Please note the registration period for in-person and online attendance closes on March 15, 2023.

About the Workshop
The workshop will serve as an opportunity to discuss the Indigenous Nations and communities, public and stakeholder review of these documents. Comments received on these documents will inform the contents of the workshop. CNSC will not be making any recommendations or decisions regarding the licensing process for OPG's DNNP during this workshop. Feedback received during the workshop will help the CNSC to better understand this project and may inform CNSC recommendations to the Commission at future licensing hearings.

An event schedule and additional workshop information will be shared with registered guests in advance of the event.

The workshop will not be recorded.

Questions and accessibility assistance
If you have any questions about the workshop or the registration process, or to request an accommodation for accessibility, please contact us by e-mail at dnnp-npnd@cnsc-ccsn.gc.ca or call 343-548-2828.

Thank you,

Laura DeCoste

Sent on behalf of:

Caroline Ducros (PhD)
(she/they; elle/iel)

Director General
Directorate of Advanced Reactor Technologies (DART)
Canadian Nuclear Safety Commission
www.nuclearsafety.gc.ca
613-862-9017

Directeur Général,
Direction des technologies de réateurs avancés (DTRA)
Commission Canadienne de sûreté nucléaire
www.nuclearsafety.gc.ca
613-862-9017

From:	DeCoste, Laura
Bcc:	consultation@alderville.ca; dmowat@alderville.ca; danamonague@chimnissing.ca; consultations@chimnissing.ca; jl.porte@georginaisland.com; Charlotte Gurnsey; lisam@mbq-tmt.org; consultation@ramafirstnation.ca;
Subject:	Participant funding available for Darlington New Nuclear Project environmental assessment hearing for applicability of BWRX-300 technology
Sent:	2023-04-03 3:54:00 PM

Hello!

The purpose of this email is to notify you that funding is available to assist Indigenous Nations and communities, members of the public, and stakeholders in reviewing submissions from CNSC staff and Ontario Power Generation regarding OPG's proposed Darlington New Nuclear Project (DNNP). This funding will also support participation at the public hearing, which will be held the week of January 22, 2024.

This hearing will be for the Commission to consider the applicability of the environmental assessment of the DNNP with respect to OPG's selected BWRX-300 small modular reactor technology.

A separate public hearing, to be held no earlier than October 2024, will consider a construction licence for the DNNP, pending the Commission's decision from the first hearing.

The deadline to apply for participant funding is May 26, 2023. Apply here: https://www.nuclearsafety.gc.ca/eng/the-commission/participant-funding-program/opportunities/DNNP.cfm

For more details: https://www.nuclearsafety.gc.ca/eng/the-commission/hearings/documents_browse/index.cfm?yr=2024

Please let me know if you have any questions or concerns. CNSC staff are available to meet and discuss the DNNP project as well as the regulatory process.

Thank you,
Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire

laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	DeCoste, Laura
Subject:	Upcoming CNSC Webinars: : Learn more about the licensing review for Ontario Power Generation's Darlington New Nuclear Project
Sent:	2023-05-31 11:14:00 AM

Hello!

Join us on June 22 (English) and June 20 (French) for webinars on the CNSC's licensing review of the Darlington New Nuclear Project.

Ontario Power Generation (OPG) is proposing to construct a small modular reactor of up to 300 megawatt electric as early as 2024 in the Municipality of Clarington, Ontario. In December 2021, OPG announced its selection of GE Hitachi's BWRX-300 technology. OPG currently holds a site preparation licence and submitted an application for a licence to construct in October 2022.

The purpose of this webinar is to:

- familiarize Indigenous Nations and communities and the public with the project and its activities
- discuss OPG's licence to construct application and give an update on the CNSC's technical review, including the review of OPG's Environmental Impact Statement and its Plant Parameter Envelope Review for the BWRX-300
- provide information on the upcoming public hearing in January 2024, participant funding opportunities, and future engagement events for the project
- answer questions about the project and the regulatory process

For more information and to register for the webinar, please visit http://nuclearsafety.gc.ca/eng/stay-connected/get-involved/webinar-dnnp.cfm or http://nuclearsafety.gc.ca/fra/stay-connected/get-involved/webinar-dnnp.cfm

Please don't hesitate to let me know if you have any questions!

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	DeCoste, Laura
Subject:	Meet Canada's Nuclear Regulator at an Open House on September 26 in Oshawa Ontario
Sent:	2023-08-10 12:00:00 PM

Hello!

On **September 26, 2023 between the hours of 4:00 pm and 8:00 pm ET.,** the Canadian Nuclear Safety Commission (CNSC), Canada's Nuclear Regulator, is hosting an open house at the Courtyard by Marriott in Oshawa, Ontario, Canada.

The open house will share information on Canada's regulatory process and oversight of various nuclear projects in the Municipality of Clarington, including the Darlington Nuclear Generating Station, Darlington Waste Management Facility and the Darlington New Nuclear project, the proposed small modular reactor.

Members of the public, Indigenous Nations and communities, and anyone interested in learning more about what the CNSC does to ensure the safety, security, and protection of the health of Canadians, and support reconciliation are invited to attend. This event is also an opportunity to voice any concerns or questions you may have directly to the CNSC staff. In addition to the open house, two *Meet the Nuclear Regulator* presentations will be held at 4:30 pm ET and 6:30 pm ET on the day of the event. They will both present the same content on CNSC's regulatory framework and the role of regulatory documents. These presentations will occur at the same location of the open house, in a separate room. There is no registration required for the open house or the *Meet the Nuclear Regulator* presentations.

The CNSC is committed to creating a respectful and inclusive event. We welcome all interested people to attend this event. If you have a special need that requires accommodation, please let us know. Additional information about this event can be found here: Open house: Regulatory oversight of nuclear projects in the Municipality of Clarington, Ontario - Canadian Nuclear Safety Commission (cnsc-ccsn.gc.ca)

The CNSC would also be happy to meet directly with your community, either virtually or in person, to discuss the role of the CNSC and any nuclear projects of interest or within your community's Traditional and/ or Treaty Territory.

Please let me know if you have any questions about this event or wish to have a meeting directly with the CNSC.

Thank you,
Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission

laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	DeCoste, Laura
Subject:	Notice of webinar hosted by the Canadian Nuclear Safety Commission on the Darlington New Nuclear Project - October 31st at 11 am
Sent:	2023-10-04 8:17:00 AM

Hello!

The Canadian Nuclear Safety Commission (CNSC), Canada's Nuclear Regulator, will be hosting a webinar on **October 31st from 11:00 am to 12:30 pm** which will provide an update on the regulatory review and public hearings for the Darlington New Nuclear Project. If you are interested in attending, **please register here:** https://us06web.zoom.us/webinar/register/WN_81Er7rSxQb6uNJCVCMEWqQ

Ontario Power Generation (OPG) is proposing to construct a small modular reactor of up to 300 megawatt electric as early as 2025 in the Municipality of Clarington, Ontario. In December 2021, OPG announced its selection of GE Hitachi's BWRX-300 technology. Based on OPG's technology choice of the BWRX-300, OPG submitted updated Environmental Impact Statement (EIS) (pdf download) and Plant Parameter Envelope (PPE) (pdf download) documents and supporting documentation for CNSC review in 2022.

CNSC staff has completed a technical assessment of OPG's EIS Review and PPE Review documents and have presented the conclusions and recommendations in CMD 24-H2. The focus of this webinar will be to present an overview of CNSC staff review of OPG's submissions and conclusions as well as give information on the upcoming public hearing scheduled for January 2024.

OPG currently holds a site preparation licence and submitted an application for a licence to construct in October 2022.

The purpose of this webinar is to:

- Familiarize Indigenous Nations and communities and the public with the Darlington New Nuclear Project and its activities
- Discuss CNSC staff technical review of OPG's EIS Review and PPE Review documents, providing an overview of the CNSC staff conclusions and recommendations
- Provide information on the upcoming public hearing in January 2024, including details on how to get involved
- Answer questions about the project and the regulatory process

Please let me know if you have any questions! CNSC staff would also be happy to meet directly with you community to discuss the DNNP or the CNSC's regulatory processes, if you would prefer.

Thank you,
Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	DeCoste, Laura
Subject:	Notice of funding available to review Ontario Power Generation's application for a licence to construct for the Darlington New Nuclear Project
Sent:	2023-10-18 9:53:00 AM

Hello!

The Canadian Nuclear Safety Commission (CNSC), Canada's nuclear regulator, is offering participant funding to assist Indigenous Nations and communities, members of the public, and interested parties in reviewing the application from Ontario Power Generation (OPG) for a licence to construct for the Darlington New Nuclear Project (DNNP). This funding is also to assist in the review of related documentation, and to support participation in a potential public hearing for the Commission to consider the application.

Please note: The public hearing to consider OPG's licence to construct a single BWRX-300 reactor is dependent on the Commission's decision regarding the applicability of the DNNP environmental assessment (EA) to the BWRX-300 reactor technology. The EA's applicability is being considered at a **public hearing during the week of January 22, 2024**. If the Commission decides that the EA is applicable, it will announce a public hearing, at a later date, to review OPG's application for licence to construct.

For additional information and to apply please go here: Participant funding for review of Ontario Power Generation's application for a licence to construct (Darlington New Nuclear Project) - Canadian Nuclear Safety Commission. The deadline for submitting a participant funding application is **December 8, 2023.**

As a reminder, the CNSC is also hosting a virtual webinar on the DNNP on **October 31st from 11:00 am to 12:30 pm** which will provide an update on the regulatory review and public hearings for the Darlington New Nuclear Project. If you are interested in attending, **please register here:** https://us06web.zoom.us/webinar/register/WN_81Er7rSxQb6uNJCVCMEWqQ.

Please let me know if you have any questions! We would also be happy to meet directly with your community to discuss the CNSC's approach to regulation and the DNNP.

Thank you,

Laura DeCoste
[she, her, elle]

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From:	DeCoste, Laura
Subject:	Reminder - Darlington New Nuclear Project Hearing on the Applicability of the Environmental Assessment to the selected technology - January 23-25 2024
Sent:	2024-01-05 1:43:00 PM

Follow Up Flag:	Follow up
Flag Status:	Completed

Hello!

I hope everyone had a restful and happy holidays. I am reaching out to provide a reminder that the Canadian Nuclear Safety Commission (CNSC), Canada's Nuclear Regulator, will be holding a public hearing for the Commission to consider and decide on the applicability of the Darlington New Nuclear Project (DNNP) environmental assessment to Ontario Power Generation's selected BWRX-300 Small Modular Reactor technology. On September 19, 2023, the CNSC posted its Commission Member Document for the DNNP, which provides CNSC staff review, assessment and recommendation to the Commission on whether the DNNP Environmental assessment is applicable to the BWRX-300 Technology. A summary of the CMD is attached for your information. Additionally, the full document is posted here: http://www.cnsc-ccsn.gc.ca/eng/the-commission/hearings/cmd/pdf/CMD24/CMD24-H2.pdf

Hearing details:
Date: January 23, 24 and 25, 2024
Place: Ajax Convention Centre, 550 Beck Crescent, Ajax, Ontario. If you wish to watch the hearing live, it will be broadcasted and a link will be available here at the time of the proceeding: Watch a public Commission proceeding online - Canadian Nuclear Safety Commission (cnsc-ccsn.gc.ca)
Time: 9 am EST on January 23, 24 and 25
Agenda: Agenda for January 23-25, 2024 Public Hearing - Ref. CMD 24-H1 (nuclearsafety.gc.ca)

Please let me know if you have any questions or if you would like to meet directly with the CNSC to discuss our role in regulating nuclear energy and the DNNP.

Thank you,
Laura DeCoste
[she, her, elle]

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From:	DeCoste, Laura
Subject:	Notice of CNSC staff's update on consultation and engagement related to the DNNP requested by the Commission
Sent:	2024-02-02 3:30:00 PM

Follow Up Flag:	Follow up
Flag Status:	Completed

Hello all!

At the January 23 -25th DNNP hearing regarding the applicability of the environmental assessment to the chosen technology, the Commission requested that CNSC staff submit a report that provides an update on the consultation and engagement efforts related to the DNNP. Please find the report that was submitted to the Commission, as per the request, attached for your information. The report will also be posted on the CNSC's website.

I would like to note that we will be looking to work with your community in the coming months to update and refine the information for the Commission Member Document for the DNNP Licence to Construct application, should the project proceed. This would include reviewing and co-drafting sections of the CMD and issues tracking tables and ensuring your community's knowledge, views and perspectives are reflected in the documents. We are open to having continued discussions on your concerns and comments and working to address them to the extent possible.

Please let me know if you have any questions, or if you would like to discuss this further!

Thank you,

Laura DeCoste
[she, her, elle]

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From:	DeCoste, Laura
Subject:	Notice - CNSC Commission decision issued on Darlington New Nuclear Project environmental assessment
Sent:	2024-04-22 6:46:00 PM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hello!

I am reaching out to let you know that the Canadian Nuclear Safety Commission (CNSC) announced the Commission's decision that the existing environmental assessment for the Darlington New Nuclear Project (DNNP) is applicable to the General Electric Hitachi BWRX-300 reactor, the reactor technology selected by Ontario Power Generation (OPG).

It is important to note that this decision does not authorize the construction of a BWRX-300 reactor for the DNNP. The Commission will hold a future public hearing to consider OPG's application for a licence to construct one BWRX-300 reactor at the Darlington nuclear site. Details of this hearing will be shared when available.

For more information about the decision, please consult our news release and backgrounder. The Commission's detailed record of decision is also available upon request from the Commission Registry.

Please let me know if you have any questions, would like to discuss this decision or next steps in the DNNP regulatory and consultation process.

Thank you,
Laura DeCoste
[she, her, elle]

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B.2 Correspondence with the Mississaugas of Scugog Island First Nation

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Comment Submission: OPG's Darlington New Nuclear Project (DNNP)

Updated Plant Parameter Envelope Report
&
Environmental Impact Statement Review Report

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Mississaugas of Scugog Island First Nation
Consultation Office

March 20th, 2023

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FIRST NATION

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To the attention of:

The Canadian Nuclear Safety Commission (CNSC)

dnnp-npnd@cnsc-ccsn.gc.ca
cc; consultation@cnsc-ccsn.gc.ca

Re: OPG's DNNP Updated Plant Parameter Envelope Report and Environmental Impact Statement Review Report

Thank you for the opportunity to comment on the Updated Plant Parameter Envelope (PPE) Report and Environmental Impact Statement (EIS) Review Report for the Darlington New Nuclear Project. Comments and questions on behalf of the Mississaugas of Scugog Island First Nation (MSIFN) are below, with detailed comments on each report found on subsequent pages.

Table 1. Comments on the Updated Plant Parameter Envelope (PPE) Report

Page	Reference Text	Comment/Question
5	*"Where the BWRX-300 fell outside Revision 3 of the PPE, the design was either adjusted until it fit within the PPE, or where it could be demonstrated that the PPE value can be adjusted without introduction of unreasonable risk to the public, environment, or workers, the PPE is being revised to Revision 5 to document a new bounding envelope in these areas [R-13] [R-15]."*	• What PPE values were adjusted? Adjusting the parameters is contradictory to the intent of designing the PPE based on reactor designs considered. The BWRX-300 design did not fit within the values used in the PPE or it would not have to be adjusted.
6	*"GE-Hitachi chose not to participate in the RFP process"*	• If GE-Hitachi chose not to participate in the RFP process and the bounding limits for the PPE were designed for the ACR-1000, EPR, and AP-1000, how can the PPE properly capture the values for the BWRX-300 (made by GE-Hitachi) if they were not part of the RFP process?
6	*"The PPE was then sent to the vendors to confirm that their design(s) was (were) bounded by it. Verification was received from AECL [R-2] and Areva [R-3]."*	• Did OPG not receive verification that BWRX-300 design is bounded by the PPE?

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Page	Reference Text	Comment/Question
6	*"Between 2019 and 2021 OPG worked through a technology selection and due diligence process and in December 2021 selected the BWRX-300 as the technology to be deployed at the DNNP site"*	• Why did the due diligence process result in the selection of the BWRX-300 if that specific technology wasn't studied in the design of the PPE?
67	*"The PPE incorporates values from the BWRX-300 technology selected by OPG"*	• Does it incorporate all values from the BWRX-300? If not, what values are outstanding?
7 (Apdx. A)	*Appendix A: OPG's Plant Parameters Envelope Development Approach*	• The BWRX-300 wasn't incorporated into the design of the PPE until the revisions at the very end of the process. This seems contradictory to the purpose of designing a PPE specific for the technology that is selected to be used.
6	*"In December 2021 selected the BWRX-300 as the technology to be deployed at the DNNP site"*	• When did GE Hitachi decide to participate in the process? How long did they participate in the PPE development prior to being selected as the technology to be deployed at the DNNP site?
13	*"Revision 3 of the PPE, the distinction between VDS and RCS parameters is no longer highlighted"*	• It is important for the distinctions to be made between the Vendor Design Specific (VDS) parameters and the Reactor Class Specific parameters because the vendor that was chosen did not participate in the design of the PPE and therefore, those parameters that are VDS would not apply? • While it is understood that the values of the composite PPE are presumed to capture the values of the BWRX-300 design, it would be prudent to demonstrate a comparison between the designs that were used to create the PPE and the design technology that was chosen. Where does the BWRX-300 differ?
Table 1	*Table 1 does not include parameters that relate to design features that are no longer of interest to OPG*	• What made these parameters no longer important or of interest to OPG?
15	*"Four units of the following reactor designs could be built at the Darlington site: the AP-1000, the ACR-1000 and the EC6."*	• Why is the BWRX-300 not included in this list? How many of the BWRX reactors can be built at the Darlington site?

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Page	Reference Text	Comment/Question
143	*"The BWRX-300 uses a deeply embedded reactor building 38 meters below DNNP plant grade".*	• P.62 speaks to the site water level, measuring the maximum flood and maximum ground water. If the BWRX is below grade 38 metres, how will these parameters change? • P. 61 speaks to earthquakes and the ground acceleration for which the plant is designed. The BWRX was not included in the list of limiting reactors. How will the BWRX design be compromised given that it is deeper below grade than the other reactors?
143	*"A distinct feature of this reactor design is that water is circulated within the core by natural circulation."*	• It is our understanding that water interacts with the radioactive bundles in the BWRX-300 design. Has the PPE considered the effects on humans and the environment if the radioactive water interacts with the environment? It is our understanding that the interaction of water with the nuclear bundles is fairly unique to this design.

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Table 2. Comments on the Environmental Impact Statement (EIS) Review Report

Page	Reference Text	Comment/Question
4	*"There is no expiry on an EA decision as long as the scope of that project remains within the scope of the original EA."*	• It is understood that the DNNP Project is subject to the Ontario Environmental Assessment Act, which typically has an expiry date for most projects. Please explain why there is no expiry date on the EA decision for DNNP, as well as how OPG justifies the project remaining within the original scope from 2011. The natural environment on the DNNP site as well as the surrounding land use has changed significantly over the last decade and must be taken into consideration.
7	*"OPG recognizes that while the assessment of environmental effects from DNNP has been satisfied from the Western scientific perspective, it may not fully address the impact of the DNNP on Indigenous inherent and treaty rights as they are understood today. OPG endeavors to continue to work with Indigenous nations and communities having a historical relationship with the site to appropriately identify the impacts of the Project on them and to achieve feasible mitigation measures and/or accommodation."*	• It should be noted that MSIFN submitted comments to OPG and the ERO regarding OPG's Endangered Species Act (ESA) Permit for the DNNP project site preparation. MSIFN raised concerns regarding the lack of guarantee for long-term protection of the SAR habitat on site. MSIFN requested that a conservation easement or restrictive covenant be placed on the created SAR habitat to ensure it is not destroyed during further site prep for reactors 2-4. MSIFN also suggested an off-site ecological restoration fund as an alternative, but OPG was unwilling to accommodate either request. • MSIFN considers these requests to be feasible, therefore it is not fair to say that "OPG endeavors to achieve feasible mitigation measures and/or accommodation".
16	*"More specifically, the PPE was developed based on the limiting parameters for four different types of reactors that were considered at that time, and it was identified that the PPE may need to be modified when the specific reactor technology was selected."*	• Please explain the reasoning behind creating the PPE before selecting a specific reactor technology. This does not seem like the best method to ensuring the chosen reactor is environmentally and physically compatible with the DNNP site. Why did OPG take this selection approach?
20	*"Nevertheless, if the selected reactor technology is fundamentally different from the specific reactor technologies bounded by the Plant Parameter Envelope, the Panel recommends that a new environmental assessment be conducted."*	• As mentioned, the selected BWRXT reactor was not one of the reactors considered in the original EIS or PPE. Although OPG states that the BWRXT reactor is not fundamentally different than those previously considered, MSIFN is aware that this will be North America's first SMR. Does this not justify a new EA to ensure the technology fully conforms with the current environmental conditions and parameters?

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Page	Reference Text	Comment/Question
21	*"The GOC response therefore directed the CNSC (as a Responsible Authority) to determine if the selected technology is "fundamentally different" than the technologies specified in the EIS and if a new EA is required for the selected technology."*	• To clarify, the Government of Canada delegated this determination to the CNSC? What dictates what is "fundamentally different" between SMR technologies, and how did the CNSC come to this decision?
23	*"Up to 5%. Light (normal) water is used as coolant and moderator."*	• How much water is used in this process, and is it lake water? What happens to the water once it has been used as a coolant/moderator?
31	*"Construction of Intake and Discharge Structures (e.g., offshore submerged intake and discharge structures for the once-through lake water cooling)"*	• We would like more information about the construction of the intake and discharge structures offshore, including their size and location in Lake Ontario as well as anticipated environmental effects/mitigations.
31	*"Marine and Shoreline Works (e.g., shoreline protection and some minor lake bottom dredging)"*	• MSIFN was under the impression that limited shoreline work would be required under the new PPE/EIS due to the smaller footprint of the project. Please elaborate on details of the dredging so that we can better assess impacts to the environment.
32	*"Dismantling, demolition, and site restoration (removal of all contaminated SSCs and restoration of the site to be available for other OPG uses)"*	• Please explain what "other OPG uses" could be for the DNNP site. The site is on the shores of Lake Ontario with multiple natural heritage features and includes a wildlife corridor running through it. Should end-of-life plans not include restoring the site to as it was before, i.e. significant ecological lands with SAR habitat?
33	*"In the BWRX-300 the heated reactor coolant turns directly into steam."*	• In past discussions with OPG/CNSC staff regarding the BWRXT technology, we were told there is no "spent water" and that the process occurs in a continuous loop. Can this concept be further elaborated on? Does the process not generate wastewater?
38	*"The BWRX-300 reactor has a footprint of 19 ha. The site area for one reactor will be prepared for construction at the outset of the Project, with the additional preparation of the whole site undertaken if the deployment of four reactors proceeds."*	• Later site preparation activities are likely to destroy the newly created SAR habitat on site as the remaining reactors are constructed and the Project footprint grows. Please explain how OPG plans to maintain protection of the natural features created to satisfy their ESA permit as the project proceeds.

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Page	Reference Text	Comment/Question
39	*"The water intake and the discharge pipes will be sized for four reactors. The BWRX-300 deployment will utilize either typical underground mining techniques involving blasting and excavation or by boring using a purpose-built tunnel boring machine and/or other modern construction techniques."*	• What are the environmental risks and mitigation measures of blasting and excavation vs. boring via tunnel machine. Which is less impactful to the environment? MSIFN requests to be kept updated on the construction of the intake and discharge pipes offshore.
39	*"The BWRX-300 deployment will not expand the DNGS switchyard (Bowmanville Switching Station) as described in the EIS but will establish a new one, adjacent to the reactor buildings."*	• Why was the decision made to create a new switchyard instead of the original plans to expand the previously existing DNGS switchyard? Does this increase the project footprint?
42	*"A decommissioning strategy for BWRX-300 has not been established. A deferred dismantling strategy has been assumed."*	• It is disappointing that OPG has not created a decommissioning plan or even a preliminary strategy for the BWRXT reactors/DNNP site. OPG's own website states "It is imperative that Preliminary Decommissioning Plans (PDP) are put into place for OPG's generating facilities." • It is irresponsible to begin a project of this size without a decommissioning strategy, this is a requirement for most major projects on Crown land. Please provide MSIFN with the decommissioning strategy for the BWRXT-300 as soon as it becomes available. It is recommended that a strategy be implemented before any further site-prep is conducted.
42	*"The delay in commencement of the DNNP of several years does not, on its own, have an adverse effect on the environment. However, over time some environmental conditions at the DNNP site have changed.*	• As stated in the EIS report, commencement of the project is occurring approximately 12 years later than the original date. What was the cause of such a significant delay? • In terms of environmental conditions on site, it should be noted that the project delay also allowed significant ecological lands and SAR habitat to thrive and grow, which now must be destroyed.
45	*"The solid waste volumetric activity (Bq/m3) generated by the operation of the BWRX-300 is higher than what was assessed in the EIS"*	• It is concerning that the solid waste anticipated to be generated by the BWRXT technology is even higher than initially reported in the EIS. There is still no long-term plan for the safe management and storage of nuclear waste in Ontario, and MSIFN must live with the risk of temporarily storing this excess waste in their Treaty Territory, at the

Page	Reference Text	Comment/Question
		DWMF, without ever providing their consent. This should be considered before construction of the remaining reactors.
49	*"Since the completion of the EIS, two fish species, Lake Sturgeon and American Eel have become listed provincially as endangered under Ontario's Endangered Species Act (ESA)."*	• Will OPG be creating any beneficial actions or offsetting as they are likely to impact these two SAR species? Will DFO Authorizations be required?
49	*"Bank Swallow - Despite the average change between years for the survey area being relatively minor, there has been a notable decreasing trend (-30%) in the burrow counts since the inception of the program."*	• Is OPG not planning to impact the bank where the remaining swallows live as part of site prep? Given that bank swallow burrow counts have already been decreasing on site, is OPG able to relocate the SAR habitat or create habitat elsewhere for the species?
57	*"The EIS identified the Deepwater Sculpin, Lake Sturgeon, Atlantic Salmon and American Eel as fish species at risk. Since the EIS concluded that the nearshore area does not contain critical habitat for any of these species, and significant interactions with the existing DNGS have not been detected in monitoring studies to date (although entrainment of some Deepwater Sculpin has recently been identified), there is no further concern for these species. Nevertheless, fish protection measures will be taken if needed at the intake structure, especially for Deepwater Sculpin, so as to have no significant effects."*	• Please explain how there is no further concern for the fish species if entrainment of Deepwater Sculpin has been identified recently on site? What does OPG mean by "fish protection measures will be taken if needed at the intake structures"? MSIFN requests that fish protection measures be taken at the intake structures regardless of prevalence of SAR or other factors.
59	*"The construction of the first BWRX-300 would provide an opportunity to retain the Bank Swallow nesting habitat along the Lake Ontario shoreline as the bluff would be remaining in place.* *If the DNNP site is built out to include additional BWRX-300 reactors, additional shoreline protection would be implemented to stabilize the shoreline, and the result would likely be that this would make the nesting habitat unsuitable for Bank Swallows to inhabit."*	• See previous comment re. Bank Swallow. • The plan is for 4 reactors to be constructed on site, and various site preparations are being undertaken that fit this scope (i.e. water intake structures are being built to handle 4 reactors). Why does the EIS suggest that this may not happen, and that the SAR habitat may be retained? It seems highly unlikely that the bank swallow habitat will remain if the project proceeds as planned.

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Page	Reference Text	Comment/Question
59	*"Regarding the disruption of landscape connectivity affecting wildlife travelling along the east- west corridor, the DN site annual biodiversity monitoring since 1997 has led to the observation that wildlife are present and have been around for a long period, despite the roads and other disturbances on site. However, periodic and short-term disruption to wildlife travel along the east-west wildlife corridor are expected during the Site Preparation and Construction phase of the Project. This is consistent with the assessment in the EIS."*	• It is unreasonable to conclude that because the east-west wildlife corridor has survived past fragmentation that wildlife will still be present during/after DNNP project construction. Cumulative effects of multiple activities on site over a long period of time could permanently impact the corridor disrupting connectivity and the surrounding ecosystem. • OPG should look into retaining part of the site for the wildlife corridor, and keeping some of it fenced off to allow migration throughout the site preparation and construction period.
60	*"A comparison of emissions from the BWRX-300 reactor and the reactors assessed in the EIS, found that tritium, carbon-14, particulates, and noble gases emissions from the BWRX-300 are less than these emissions for the reactors assessed in the EIS. In contrast, the emissions of iodine are higher for the BWRX-300 than the values assumed in the EIS."*	• MSIFN notes that Iodine emissions from the BWRX-300 will be higher than anticipated in the EIS. Please explain the impacts of higher levels of radioactive iodine emissions in the atmosphere to humans and the environment.
62	*"This is particularly true in light of the Williams Treaties First Nations (WTFN) 2018 settlement agreement with the Governments of Canada and Ontario. While OPG is not privy to the contents of the settlement agreement, OPG recognizes the importance of furthering our knowledge and understanding, in ongoing meaningful engagement with the WTFN. OPG will continue to work with Indigenous Nations and communities to appropriately identify the rights impacted by the Project, and to work toward mitigation measures and/or accommodation. These commitments are reinforced by OPG's dedication to reconciliation and to renewing its relationships with Indigenous peoples."*	• As per above comments, MSIFN has raised concerns regarding the lack of guarantee for long-term protection of the SAR habitat on site in previous consultations. OPG was unwilling to accommodate either of our requests. • Although OPG may be unaware of the exact contents of the WTFN settlement agreement (2018), they do have relationships with many of the seven Treaty Nations including MSIFN. Through these relationships, OPG is aware that protection of the environment and living relatives is of high priority. When identifying rights impacted by the project and working toward accommodations, OPG should consider what they are hearing directly from impacted First Nations.

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Page	Reference Text	Comment/Question
66	*"An assessment of the effects on the biota in the wetlands which may remain on the DNNP site will be required. Mitigative measures are available to eliminate or reduce residual adverse effects to a non-significant level."*	• Please update MSIFN on the status of the wetlands on site and whether they will remain throughout the project. If they will remain, please inform us of the results of the effects assessment. If not, what will OPG do to compensate for the loss?
81	*"The Project will not result in a residual adverse effect on Aquatic Habitat because of the mitigation measures that will be implemented (notably, the Fish Habitat Compensation Plan)."*	• Please share the Fish Habitat Compensation Plan with MSIFN for review.
82	*"Once-through-cooling porous veneer intake has been designed specifically for reducing entrainment and impingement of fish. The intake incorporates design features based on fish behavioral principles and is also located offshore at depths which are less productive than inshore locations. The expected losses will be low relative to Lake Ontario populations."*	• Does OPG have an approximate number for expected fish losses through impingement and entrainment? This would allow us to understand the comparison between expected losses and Lake Ontario fish populations.
97	*"The Project is not likely to cause significant adverse environmental effects, provided the mitigation measures proposed and commitments made by OPG during the review, and the JRP's recommendations are implemented."*	• Based on the EIS and PPE, as well as the ESA Permit required for site preparation, it is not fair to say that the DNNP project will not cause significant adverse environmental effects. The mitigation measures suggested thus far do not outweigh the negative impacts of the project, and OPG is not willing to commit to protecting SAR habitat on the site long-term. Further, this conclusion is not reasonable given the lack of decommissioning plan.
104	*"The EIS considered the cumulative effect of the DNNP and other projects that would coincide with DNNP that could affect the same aquatic environment, with the predominant relevant effect of the DNNP being impingement losses of fish for the once-through cooling system."*	• Another relevant effect of DNNP would be the increase in water temperature via outflow into Lake Ontario. Thermal effects of the DNNP project should be considered alongside climate change already increasing surface water temperatures as a cumulative effect on the lake ecosystem.

Sincerely,

MSIFN Consultation Office

consultation@scugogfirstnation.com

From:	Natalya Garrod
To:	DeCoste, Laura
Cc:	Don Richardson; Thomas Turoczi; Samantha Shrubsole; Carter, Blair; Levine, Adam;
Subject:	RE: Meeting between MSIFN and CNSC staff - Discussion on MSIFN's comments on OPG's EIS review report and updated PPE report
Attachments:	2023_07_013_CNSC_Commission Member Doc Comments_MSIFN FINAL.pdf
Sent:	2023-07-13 9:29:43 AM

Follow Up Flag:	Follow up
Flag Status:	Completed

Hello Laura,

Please see attached for comments to be considered for the CMD. My apologies for getting it to you on the last day.

Thanks,

Natalya Garrod
RPP, MCIP
Consultation Advisor to MSIFN

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Thursday, June 29, 2023 2:31 PM
To: Natalya Garrod <ngarrod@scugogfirstnation.com>; Samantha Shrubsole <sshrubsole@scugogfirstnation.com>
Cc: Don Richardson <drichardson@scugogfirstnation.com>; Thomas Turoczi <tturoczi@scugogfirstnation.com>
Subject: RE: Meeting between MSIFN and CNSC staff - Discussion on MSIFN's comments on OPG's EIS review report and updated PPE report

Hi Natalya,

Sounds good! Yes, I can work with the team on a written response to MSIFN's comments and then you can let us know if you have any additional comments afterwards. Hopefully we can get back to you in the coming weeks with a response, but I will let you know if we need a bit more time.

Also, we are currently working on the Commission Member Document (CMD) for the DNNP hearing scheduled for January 2024. If MSIFN would like to provide any feedback on OPG's and/or the CNSC's consultation and engagement to date, we will include that in the CMD. Due to internal timelines, I would need any feedback by July 13th. Please let me know if you have any questions!

Thank you,
Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire

To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>; Natalya Garrod <ngarrod@scugogfirstnation.com>; Samantha Shrubsole <sshrubsole@scugogfirstnation.com>
Cc: Don Richardson <drichardson@scugogfirstnation.com>; Thomas Turoczi <tturoczi@scugogfirstnation.com>
Subject: RE: Meeting between MSIFN and CNSC staff - Discussion on MSIFN's comments on OPG's EIS review report and updated PPE report

Hello Laura,

Thanks for reaching out to reschedule. We appreciate that CNSC is providing us with the opportunity to meet with you virtually to discuss our comments and concerns.
While attending the virtual session on the EIS and PPE some points were raised that helped to satisfy some of our questions and concerns and we have no further questions for CNSC at this time.

In the past CNSC has provided written responses to our comments and we wondered whether you would be willing to provide responses to our comments in written format. It allows us to document the responses and consider them carefully to determine whether we have any additional comments or concerns. If we do, we will reach out to you.

This approach would be much appreciated,

Natalya Garrod
RPP, MCIP
Consultation Advisor to MSIFN

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Tuesday, June 27, 2023 8:03 AM
To: Natalya Garrod <ngarrod@scugogfirstnation.com>; Samantha Shrubsole <sshrubsole@scugogfirstnation.com>
Cc: Consultation <consultation@scugogfirstnation.com>
Subject: RE: Meeting between MSIFN and CNSC staff - Discussion on MSIFN's comments on OPG's EIS review report and updated PPE report

Hello!

I'm just reaching out to reschedule the meeting between MSIFN and CNSC staff on MSIFN's comments on OPG's EIS review report and updated PPE report. We have the following days/ times available:

highlight their concerns and comments related to OPG's EIS review and PPE documents, have a discussion about the comments and have CNSC staff answer questions that MSIFN has. We can then provide an update on next steps in the regulatory process.

Thank you,
Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: Natalya Garrod <ngarrod@scugogfirstnation.com>
Sent: June 16, 2023 10:36 AM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>; Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; Janzen, Emily <emily.janzen@cnsc-ccsn.gc.ca>; Steedman, Gavin <gavin.steedman@cnsc-ccsn.gc.ca>; Simon, Nicole <Nicole.Simon@cnsc-ccsn.gc.ca>; Rzentkowski, Bartek <bartek.rzentkowski@cnsc-ccsn.gc.ca>; Sauvé, Daniel <daniel.sauve@cnsc-ccsn.gc.ca>; Eaton, Sarah <Sarah.Eaton@cnsc-ccsn.gc.ca>; Samantha Shrubsole <sshrubsole@scugogfirstnation.com>; Harpell, Heather <Heather.Harpell@cnsc-ccsn.gc.ca>
Subject: Re: Meeting between MSIFN and CNSC staff - Discussion on MSIFN's comments on OPG's EIS review report and updated PPE report

Great thanks Laura!

Natalya

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From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Friday, June 16, 2023 10:15:10 AM
To: Natalya Garrod <ngarrod@scugogfirstnation.com>; Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; Janzen, Emily <emily.janzen@cnsc-ccsn.gc.ca>; Steedman, Gavin <gavin.steedman@cnsc-ccsn.gc.ca>; Simon, Nicole <Nicole.Simon@cnsc-ccsn.gc.ca>; Rzentkowski, Bartek <bartek.rzentkowski@cnsc-ccsn.gc.ca>; Sauvé, Daniel <daniel.sauve@cnsc-ccsn.gc.ca>; Eaton, Sarah <Sarah.Eaton@cnsc-ccsn.gc.ca>; Samantha Shrubsole <sshrubsole@scugogfirstnation.com>; Harpell, Heather <Heather.Harpell@cnsc-ccsn.gc.ca>
Subject: RE: Meeting between MSIFN and CNSC staff - Discussion on MSIFN's comments on OPG's EIS review report and updated PPE report

No worries! Unfortunately, I don't think June 27th will work on our end – I can work with the team to find some potential dates / times and get back to MSIFN with some options.

Enjoy your vacation!
Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
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From: Natalya Garrod <ngarrod@scugogfirstnation.com>
Sent: June 16, 2023 9:50 AM
To: Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; Janzen, Emily <emily.janzen@cnsc-ccsn.gc.ca>; Steedman, Gavin <gavin.steedman@cnsc-ccsn.gc.ca>; Simon, Nicole <Nicole.Simon@cnsc-ccsn.gc.ca>; Rzentkowski, Bartek <bartek.rzentkowski@cnsc-ccsn.gc.ca>; Sauvé, Daniel <daniel.sauve@cnsc-ccsn.gc.ca>; Eaton, Sarah <Sarah.Eaton@cnsc-ccsn.gc.ca>; Samantha Shrubsole <sshrubsole@scugogfirstnation.com>; Harpell, Heather <Heather.Harpell@cnsc-ccsn.gc.ca>; DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Subject: Meeting between MSIFN and CNSC staff - Discussion on MSIFN's comments on OPG's EIS review report and updated PPE report

Hello,

I apologize for the last-minute request however the team at MSIFN will need to reschedule this meeting. Unfortunately due to competing priorities we are no longer available.

I will be away on vacation next week but would be happy to look at rescheduling for the following week.

We have availability on the 27th of June if there is any availability on that day.

Thank you,
Natalya

From:	Dormer, Natalie
To:	consultation@scugogfirstnation.com; klarocca@scugogfirstnation.com;
Cc:	Ducros, Caroline; Simon, Nicole; Rzentkowski, Bartek; Janzen, Emily; Naraine, Matthew; Ouellette, Dominique; DeCoste, Laura; Levine, Adam; Cattrysse, Clare; Jiao, Zijun; Darlington New Nuclear Project / Nouveau projet nucleaire de Darlington;
Subject:	CNSC Response to MSIFN's Comments on Darlington New Nuclear Project (DNNP) Updated Plant Parameter Envelope (PPE) and Environmental Impact Statement (EIS) Review
Sent:	2023-08-29 11:05:47 AM

Good morning,

Please find the attached letter of correspondence which is of interest to the MSIFN consultation office.

This email will serve as confirmation of notification for this correspondence. In an effort to shrink our environmental footprint, CNSC will not be mailing a hard copy of this letter.

Please send your questions regarding this letter to Nicole Simon at nicole.simon@cnsc-ccsn.gc.ca, or to Laura DeCoste at laura.decoste@cnsc-ccsn.gc.ca.

Best,
Natalie

Natalie Dormer (she/her/elle)
Administrative Assistant / Adjointe administrative
Advanced Reactor Licensing Division / Division de l'autorisation des réacteurs avancés
Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire
343-540-7411
natalie.dormer@cnsc-ccsn.gc.ca

Directorate of Advanced Reactor Technologies

UNCLASSIFIED
e-Doc 7083159
File 2.01

August 29, 2023

Mississaugas of Scugog Island
Consultation Office
22521 Island Rd.
Port Perry, ON L9L 1B6

Subject: CNSC Response to MSIFN's Comments on Darlington New Nuclear Project (DNNP) Updated Plant Parameter Envelope (PPE) and Environmental Impact Statement (EIS) Review

Dear MSIFN Consultation Office,

The purpose of this letter is to provide a response to the Mississaugas of Scugog Island First Nation's (MSIFN) comments on OPG's updated Plant Parameter Envelope (PPE) Report and Environmental Impact Statement (EIS) Review Report, submitted to CNSC staff on March 20, 2023 [1].

CNSC staff appreciate the involvement of representatives from MSIFN in the CNSC's Darlington New Nuclear Project (DNNP), the thorough and detailed comments that were submitted, and the participation at the CNSC Workshop held on April 04, 2023. In the attachment to this letter, CNSC staff have provided responses to some of the concerns and themes raised by MSIFN related to the applicability of the DNNP Environmental Assessment (EA) to deployment of up to four BWRX-300 reactors.

CNSC staff have considered the comments and feedback in their technical review and have encouraged OPG to have discussions regarding these comments with MSIFN as well. CNSC staff continue to remain open to meeting with MSIFN to further discuss comments, concerns, or the contents of this letter. CNSC staff encourage MSIFN to continue having discussions and working with the CSNC and OPG on addressing the concerns raised, as appropriate. CNSC staff take the comments seriously and hope that these responses lead to continued discussions with MSIFN on your outstanding concerns.

In response to the Joint Review Panel (JRP) Recommendation #1 [2], OPG has reviewed the 2009 DNNP EIS, driven by the revised PPE that encompasses the deployment of up to four BWRX-300 reactors. The objective of this review was to ensure that any predicted environmental effects of the deployment of the BWRX-300 reactors remain bounded within the EA.

The upcoming Commission Hearing, currently scheduled for January 2024, will focus on the applicability of the EA to the BWRX-300 reactors, in accordance with JRP Recommendation #1. The Commission will be requested to determine whether the EA is applicable to the BWRX-300 reactor technology. CNSC staff's recommendation to the Commission will be detailed in a forthcoming Commission Member Document (CMD), which will be made available for review after **September 18, 2023**.

CNSC staff acknowledge that MSIFN have additional concerns related to the DNNP in general that are outside the scope of the first hearing, including potential impacts from the construction and operation of the DNNP on the environment and MSIFN's Indigenous and Treaty Rights. CNSC staff remain fully committed to working to address the concerns to the extent possible and continuing to consult and engage with MSIFN regarding the DNNP, including various opportunities for collaborative activities in the regulatory review process, and in advance of the potential Commission proceeding in relation to OPG's application for a Licence to Construct one BWRX-300 reactor at the DNNP site. This may include a collaborative Rights Impact Assessment, discussion on potential mitigation measures to address MSIFN's additional concerns and potential impacts to Indigenous and/or Treaty rights. CNSC staff look forward to ongoing meetings and discussions on these important topics.

Should you have any questions about this letter please do not hesitate to contact me, Nicole Simon at Nicole.Simon@cnsc-ccsn.gc.ca or (613) 281-5405, or Laura DeCoste at laura.decoste@cnsc-ccsn.gc.ca or (343) 571-6491.

Regards,

Sarah Eaton
Director,
Advanced Reactors Licensing Division (ARLD)

c.c.: C. Ducros, N. Simon, B. Rzentkowski, E. Janzen, M. Naraine, D. Ouellette, L. DeCoste, A. Levine, C. Cattrysse, Z. Jiao, DNNP Mailbox (CNSC)

References

[1] Letter from MSIFN Consultation Office to Interventions (CNSC), *Comment Submission: OPG's Darlington New Nuclear Project (DNNP): Updated Plant Parameter Envelope Review & Environmental Impact Statement Review*, dated March 20, 2023 (e-Doc 6998794).

[2] Report, *Joint Review Panel – Environmental Assessment Report – Darlington New Nuclear Power Plant Project*, dated August 25, 2011 (e-Doc 3784878).

[3] CNSC Licence, *Nuclear Power Reactor Site Preparation Licence for Ontario Power Generation New Nuclear at Darlington Generating Station*, PSRL 18.00/2031, effective date October 12, 2021 (e-Doc 6504521).

Appendix

CNSC staff responses to MSIFN's Issues, Concerns and Comments Related to the Applicability of the BWRX-300 Reactors to the DNNP Environmental Assessment

MSIFN's Issue, Concern or Comment	CNSC Response
MSIFN commented that, although OPG stated certain environmental effects would be reduced with the selection of the BWRX-300 reactor, there remain environmental effects that are of concern to MSIFN.	CNSC staff note that, even if the Commission determines that the BWRX-300 is bounded by the EA, OPG will still be required to demonstrate that the deployment of the BWRX-300 reactors will remain protective of human health and the environment, pursuant to the *Nuclear Safety and Control Act* in a future proceeding. CNSC staff will present its recommendations following our technical review of OPG's application for a licence to construct a single BWRX-300 reactor in a future Commission proceeding.
MSIFN commented that the environment and surrounding land use has changed significantly since the EA, and that OPG must consider such changes in their EIS Review.	Condition G.3 of OPG's site preparation licence (PRSL) 18.00/2031 [3] requires that OPG monitor land use in a 10-kilometre radius surrounding the Darlington site, and work with the Municipality of Clarington and the Region of Durham to prevent sensitive developments in these areas. Under that licence condition, OPG is required to notify the CNSC if there are sensitive land uses proposed within 3 kilometres of the Darlington site. Furthermore, OPG is required to provide CNSC with an annual report summarising licensed activities conducted under the PRSL, which includes a summary of OPG's activities under licence condition G.3.
MSIFN commented that the natural environment on the DNNP site has changed significantly over the last decade.	CNSC staff note that OPG's EIS Review report provides a description of the changes to the local and regional environment, with respect to the terrestrial and atmospheric components assessed under the DNNP EA. OPG has continued to carry out terrestrial environment studies since the completion of the EA. OPG's EIS Review report states that as of 2022, the terrestrial environment

MSIFN's Issue, Concern or Comment	CNSC Response
	characteristics remain similar to those described in the EA, with the exception of several changes to species listed as species at risk (SAR) under the federal *Species at Risk Act* or the province of Ontario's *Endangered Species Act* (ESA). CNSC staff note that project activities that have an adverse effect on identified SAR or their habitat, under federal or provincial jurisdiction, require approvals and implementation of appropriate compensatory measures from responsible authorities—for example, Environment and Climate Change Canada (ECCC) and the Ontario Ministry of the Environment, Climate, and Parks (MOECP). CNSC staff reviewed the studies provided by OPG on several species at risk, including bats, bank swallows, other mammals, and vegetation on the DNNP site, and concluded that the measures proposed to mitigate the effect on these species are adequate.
MSIFN raised concerns about solid radioactive wastes, airborne radioiodine emissions, and their overall effects on the general environment, as well as human and non-human biota.	CNSC staff acknowledge that the volumetric inventory of solid radioactive wastes, and the predicted airborne emissions of radioiodines during normal operations are slightly higher than the values in the EA. CNSC staff have reviewed OPG's analyses and concluded that the contribution of releases to the overall radiological dose to human and non-human biota, due to normal operations of the BWRX-300, is a fraction of the regulatory dose limit for members of the public and is not expected to constitute a hazard to human or non-human health.

MSIFN's Issue, Concern or Comment	CNSC Response
MSIFN raised concerns regarding the applicability of the PPE approach and what is considered a fundamental difference between chosen reactor technologies.	The PPE identified a set of design parameters and associated limiting values from each of the reactor technologies under consideration by the Government of Ontario at the time. It described a bounding scenario for the DNNP in which the selection of a reactor technology would fit, and provided a basis for the development of the EA. In 2011, both the CNSC and the JRP accepted the PPE as a bounding envelope of plant design and site characteristics and have established the PPE within the licensing basis for the DNNP. CNSC staff's assessment of the PPE and EIS Review reports focused on determining whether the predictions and conclusions of the EA remain valid, taking into consideration the BWRX-300 technology selected by OPG. CNSC staff reviewed OPG's analysis of the BWRX-300 against the PPE to determine whether any of the 198 parameters fall within or outside the PPE. For parameters that were outside the PPE, CNSC staff reviewed OPG's analysis to determine whether the parameter would impact or alter the conclusions of the EA. CNSC staff conducted a technical review of OPG's EIS Review against the DNNP EA to evaluate potential changes in environmental effects introduced by the BWRX-300.

From:	DeCoste, Laura
To:	drichardson@scugogfirstnation.com; sshrubsole@scugogfirstnation.com; ngarrod@scugogfirstnation.com;
Cc:	Consultation
Subject:	CNSC response to MSIFN's questions regarding DNNP waste management and consent
Sent:	2023-09-21 8:23:00 AM

Hello everyone!

Please see attached the CNSC's response to the questions raised below regarding DNNP waste management and consent. Currently, we have a meeting scheduled to discuss this further on September 29th, but unfortunately we will need to reschedule this meeting. Do any of the following times / dates work for MSIFN?

- Wednesday Oct 11 1-2pm
- Friday October 13 1030-1130
- Tuesday October 17th from 11am to noon

I also wanted to let you know that the Commission Member Document (CMD) for the Darlington New Nuclear Project hearing scheduled for January 2024 is now available. This document has been posted online here, along with OPG's hearing submission. The CNSC is also creating a summary of the CMD, which should be available in the coming weeks and I will share that as well when it is ready.

Please let me know if you have questions about any of this!

Thank you,
Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: Don Richardson <drichardson@scugogfirstnation.com>
Sent: Thursday, August 24, 2023 3:54 PM
To: McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>; Carter, Blair <blair.carter@cnsc-ccsn.gc.ca>; MacDonald, Daniel <daniel.macdonald@cnsc-ccsn.gc.ca>; DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>; Kalindjian, Taline <taline.kalindjian@cnsc-ccsn.gc.ca>; MacDonald, Paul

<Paul.MacDonald@cnsc-ccsn.gc.ca>; Richardson, Ross <Ross.Richardson@cnsc-ccsn.gc.ca>; Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; Samantha Shrubsole <sshrubsole@scugogfirstnation.com>; Natalya Garrod <ngarrod@scugogfirstnation.com>; Thomas Turoczi <tturoczi@scugogfirstnation.com>
Subject: Re: MSIFN-CNSC Monthly Meeting

Hi all,

We hope you are enjoying the last days of August.

With regard to the agenda item at our next meeting on the Darlington New Nuclear Project (DNNP), can you provide us in advance of the meeting with the CNSC's perspective on how the original EA and the regulatory process for the applicability of the DNNP environmental assessment (EA) and plant parameter envelope to selected reactor technology address:

1) Low level waste
2) Intermediate level waste
3) High level waste / used nuclear fuel
4) Nuclear waste storage requirements on and off site

We met with OPG today and we are given to understand that it is likely that:

1) low level nuclear waste would be stored at a near surface disposal facility (NSDF) managed by OPG and likely at the Darlington site - and that such a facility would require the consent of treaty rights holders as per Canada's Policy for Radioactive Waste Management and Decommissioning, and NWMO's Integrated Strategy for Radioactive Waste recommendations
2) intermediate non-fuel waste would need to go to a Deep Geological Repository (DGR) with implementation by the NWMO - despite such a site not being in existence or approved, and also requiring consent of treaty rights holders - and presenting uncertainty about where this waste will go if such a site is not approved and available
3) used nuclear fuel would be stored in the reactor facility for seven years, would need to then be stored at the Darlington site (but not at the existing Darlington waste management facility) unless and until there is an offsite DGR that would accept this used nuclear fuel - and as a result, the DNNP project may require an application for a site specific used nuclear fuel facility, and also requiring consent of treaty rights holders

We have concern that the planning processes for nuclear waste for the DNNP are not clear and transparent in the context of the regulatory processes around the applicability of the DNNP EA and the plant parameter envelop. We need more clarity on how wastes are dealt with in the DNNP EA with respect to the plant

parameter envelop, the upcoming hearing in January, and the requirements for the consent of treaty rights holders.

We may need to have a separate meeting or meetings on this specific topic.

Thanks,
Don

Don Richardson, Ph.D.
Consultation Advisor
Mississaugas of Scugog Island First Nation
www.scugogfirstnation.com
drichardson@scugogfirstnation.com
Cell: 226-820-5086

From: McCavitt, Keely
Sent: Friday, August 11, 2023 11:07 AM
To: McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>; Carter, Blair <blair.carter@cnsc-ccsn.gc.ca>; MacDonald, Daniel <daniel.macdonald@cnsc-ccsn.gc.ca>; DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>; Kalindjian, Taline <taline.kalindjian@cnsc-ccsn.gc.ca>; MacDonald, Paul <Paul.MacDonald@cnsc-ccsn.gc.ca>; Richardson, Ross <Ross.Richardson@cnsc-ccsn.gc.ca>; Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; Samantha Shrubsole <sshrubsole@scugogfirstnation.com>; Don Richardson <drichardson@scugogfirstnation.com>; Natalya Garrod <ngarrod@scugogfirstnation.com>; Thomas Turoczi <tturoczi@scugogfirstnation.com>
Subject: MSIFN-CNSC Monthly Meeting
When: Monday, September 11, 2023 2:30 PM-3:30 PM.
Where: Microsoft Teams Meeting

MSIFN-CNSC Monthly Meeting

Proposed Agenda

Sept 11 2023

- Welcome

- Presentation on Pickering extension (25 mins)
- Presentation on Rights Impact Assessment process for the Darlington New Nuclear Project (25 mins)
- Other topics (5 mins)
    - Potassium Iodide (KI) pill fact sheet
    - Darlington IEMP sampling Sept 19 – contacts and logistics
    - Potential leadership meeting
- Actions and next meeting on October 10 (5 mins)

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CNSC response to MSIFN's August 24th email regarding DNNP waste management and consent:

As part of the original Joint Review Panel Environment (JRP) Assessment process, the Panel reviewed OPG's plans for the management of spent fuel and low and intermediate-level waste and determined whether OPG's plans will result in significant residual effects on the human environment after mitigation measures are applied. The Panel concluded that radioactive and used fuel waste is not likely to result in significant adverse environmental effects, taking into account the implementation of controls and measures required under the CNSC regulations for radioactive waste management. The Panel also issued two recommendations and OPG remains committed to implementing the recommendations from the JRP for waste management (DNNP Commitments Report, NK054-REP-01210-00078), D-C-9.1. CNSC staff are tracking this commitment and will only close the commitment if OPG has demonstrated they have adequately addressed the recommendation from the Panel.

The Plant Parameter Envelope (PPE) for the Darlington New Nuclear Project (DNNP) identified a set of design parameters and associated limiting values from the technologies under consideration by the Government of Ontario at the time. The PPE described the bounding features of the DNNP. The JRP accepted the PPE as a bounding envelope of plant design and site characteristics in the licensing basis for the DNNP.

The PPE parameters related to radioactive waste are:

- the total annual volume (m3/year) generated and annual activity (Bq/year) by radionuclides present in solid radioactive waste
- the area of land required to provide onsite storage of low-level radioactive waste in square kilometres

In assessing the applicability of BWRX-300 technology, OPG determined the solid waste volumetric activity (Bq/m^3) generated by the operation of the BWRX-300 is higher than what was assessed in the PPE assessment. To mitigate this hazard, OPG will be required to ensure the design of the handling equipment for waste will manage the higher activity.

The above information summarizes the process for determining the environmental impact of the DNNP with the selection of the BWRX-300, and how waste produced by the BWRX-300 is assessed by the PPE. The waste management strategies proposed by OPG, and communicated to the MSIFN, have changed from what was originally proposed to the Panel. The CNSC expects OPG to have a credible plan for the management of all radioactive wastes and understands that these plans can change. As an example, at the time of the JRP OPG was preparing the for the construction of a Deep Geologic Repository (DGR) in Bruce County, Ontario for the disposal of low and intermediate-level wastes.

If the Commission determines that the EA is applicable to the BWRX-300 technology and the DNNP project progresses through the licensing stages, CNSC staff will evaluate OPG's proposed plans for the long-term management of wastes produced by the DNNP. This will be of particular focus should this project progress to the Licence to Operate phase. These plans will be incorporated in the Preliminary Decommissioning Plan (PDP), which is a living document that captures the plans and strategies for the eventual decommissioning of the DNNP. The PDP is revised at each stage of the licensing process and captures the lifecycle planning for decommissioning and waste management.

The CNSC is committed to supporting the Government of Canada's whole-of-government approach to implementing the United Nations Declaration on the Rights of Indigenous Peoples Act (UNDA). The CNSC is committed to working in consultation and cooperation with Indigenous partners and relevant federal departments and agencies to support the implementation of measures in the UNDA Action Plan that intersect with the CNSC's mandate, including measures that relate to free, prior and informed consent on natural resource projects and supporting a whole-of-government approach to the right of Indigenous peoples to participate in decision-making. Measure #32, which relates to developing practical guidance for successful free, prior and informed consent (FPIC) on natural resource projects, is being led by Natural Resources Canada, who is well placed to lead these important discussions with Indigenous partners, industry and across federal departments and agencies to develop a shared understanding of expectations when it comes to free, prior and informed consent around federally regulated projects. Currently, we are at the very beginning of implementing this generational work. With regards to measure #32 specifically, the CNSC is waiting for further clarity from Natural Resources Canada on next steps for implementation, and we look forward to participating in future policy discussions related to this measure in the months and years ahead. While the CNSC's current approach to Indigenous consultation and engagement is mindful of and consistent with the principles articulated in the UN Declaration, the CNSC is committed to ensuring that our approach aligns with any new guidelines and best practices that emerge through the implementation of measure #32, and other relevant measures in the action plan.

Throughout all aspects of the licensing process for the DNNP, CNSC staff will ensure that MSIFN have meaningful opportunities to participate, to ensure all issues and concerns are considered. CNSC staff are committed to working with MSIFN to address the concerns they have with regards to waste management for the DNNP, including concerns about potential impacts on Indigenous and/or Treaty rights. CNSC staff plan to conduct a collaborative Rights Impact Assessment with MISFN, which will include discussions around mitigation measures to address potential impacts on Indigenous and/ or Treaty rights from the DNNP.

From:	DeCoste, Laura
To:	sshrubsole@scugogfirstnation.com; drichardson@scugogfirstnation.com; ngarrod@scugogfirstnation.com; rlukacs@scugogfirstnation.com;
Subject:	Follow up from October 10th meeting with the CNSC - Rights Impact Assessment documents
Sent:	2023-10-11 11:32:00 AM

Hi all!

As requested at yesterday's meeting, please find attached the following documents related to the CNSC's approach to Rights Impact Assessments:

- Presentation on the CNSC's framework for RIA
- Template for an RIA table of contents/ report outline
- Appendix A (Edocs #5929618) – option to include in the report, to summarize the potential impacts to rights and interests, severity, mitigation and residual impacts.
- RIA Criteria and Decision Matrix (Edocs 6345306) - Criteria for assessing the severity of impacts to Indigenous and/or treaty rights and decision matrix for applying the assessment criteria to determine the overall severity of the impact to a right

Examples of RIAs conducted for the NSDF project can be found here: https://www.nuclearsafety.gc.ca/eng/the-commission/hearings/cmd/pdf/CMD22/CMD22-H7.pdf. The RIAs start on page 322/590 of the PDF. Additional RIA's are found in appendix D, starting on page 425 of the PDF.

We currently have a meeting scheduled for next Tuesday, October 17th to discuss MSIFN's questions around the DNNP waste management and the responses provided by the CNSC on September 21st. I am hoping to save some time at the end to discuss the DNNP RIA further, including how MSIFN would like to collaborate on the report and timelines.

Please let me know if you have any questions!

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
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From:	Samantha Shrubsole
To:	DeCoste, Laura
Cc:	Consultation
Subject:	Re: Follow up to DNNP question raised during MSIFN/CNSC monthly meeting
Sent:	2023-11-15 3:53:07 PM

Hi Laura,

Thank you for this response, it is helpful in our understanding.

We will let you know if we have any further questions.

Thanks,
Sam

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Friday, November 3, 2023 8:08 AM
To: Samantha Shrubsole <sshrubsole@scugogfirstnation.com>; Don Richardson <drichardson@scugogfirstnation.com>; Natalya Garrod <ngarrod@scugogfirstnation.com>; Consultation <consultation@scugogfirstnation.com>
Subject: Follow up to DNNP question raised during MSIFN/CNSC monthly meeting

Hi everyone!

During the October 10th MSIFN/CNSC staff monthly meeting, a question regarding the DNNP EA follow up program was asked and CNSC staff committed to providing a response. Please find the question and response below.

Question:
MSIFN is concerned about OPG using EA data collected in previous projects that were covered by outdated EA regulations: they have followed up with OPG regarding this, and have not yet had a response. MSIFN requested that CNSC staff confirm if the original EA follow-up program from the DNNP EA is still valid and how it compares to current requirements and expectations for EA follow-up programs.

CNSC staff response:
Yes, the original Environmental Assessment (EA) follow-up program is still valid and CNSC staff are ensuring OPG completes the actions required. An EA follow-up program is developed to verify the accuracy of the EA, and to determine the effectiveness of any mitigation measures. OPG has incorporated modern guidance and updated environmental data, as well as feedback received from Indigenous Nations and communities their EA follow-up program elements. Follow-up

programs are updated and revised based on the results of environmental monitoring, updated codes and standards, the identification of new species at risk, and when directed by a Responsible Authority (RA). The CNSC will ensure the implementation of OPG's EA Follow-Up Programs through the introduction of specific licensing requirements, including licence conditions or inclusion of specific requirements in a Licence Conditions Handbook. Licence condition 15.2 of site preparation licence PRSL 18.00/2031 requires that OPG implement and maintain the EA Follow-Up Program in accordance with federal guidelines and in consultation with federal RAs and Indigenous Nations and communities. CNSC staff have reviewed and concluded that OPG's proposed EA follow-up monitoring program remains suitable for the deployment of BWRX-300. Further, OPG has indicated that if unanticipated adverse environmental effects emerge, they will be addressed through adaptive management measures. These changes will be reported on annually and reviewed by CNSC staff. Note that Appendix C of the CMD provides an overview of the current status of the follow-up program, as of the date of the CMD

Let me know if you have any questions on this.

Hope everyone has a good weekend!
Laura DeCoste
[she, her, elle]

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From:	DeCoste, Laura
To:	drichardson@scugogfirstnation.com; sshrubsole@scugogfirstnation.com; rlukacs@scugogfirstnation.com; ngarrod@scugogfirstnation.com;
Cc:	Levine, Adam
Subject:	Follow up from January 9th discussion on the DNNP Rights Impact Assessment process
Sent:	2024-01-11 8:47:00 AM

Follow Up Flag:	Follow up
Flag Status:	Completed

Hi everyone!

As discussed during the January 9th MSIFN/CNSC monthly meeting, I am following up to provide the CNSC's position and proposed path forward for the DNNP rights impact assessment. CNSC staff acknowledge the concerns that MSIFN has raised to date around the timelines and scope of the RIA and MSIFN's concern that the RIA will be precedent setting. CNSC staff's view is that this assessment is not precedent setting as the RIA framework would be flexible and tailored to each specific future project or decision as well as the Indigenous Nation or community that is being consulted. The CNSC's approach to RIA is consistent with the Government of Canada's commitments with respect to recognition, protection, and upholding of the rights of Indigenous peoples. CNSC staff have also conducted benchmarking against existing RIA frameworks and guidance (e.g. IAA Interim Guidance: Assessment of Potential Impacts on the Rights of Indigenous Peoples).

From the CNSC's perspective, the goal of the RIA will be to gather available information, analyze potential impacts to rights related to the DNNP project based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts in order to make a collaborative recommendation to the Commission about potential impacts on rights from the DNNP. The report will include details about MSIFN's concerns that have been identified and views regarding gaps in information, such as Indigenous Knowledge and land/water use data. This is an analysis and information that CNSC staff need to provide to the Commission to support their decision making regarding the DNNP and will need to be submitted as part of our Commission Member Document package tentatively due in early May 2024. Previously we had talked about the possibility of MSIFN drafting sections of the report. However, due to the regulatory timeline we do need to get started on the assessment and report, based off of existing information that is on the record, available publicly and submitted by MSIFN and OPG. We propose that CNSC staff draft the first version, based on all of the information we have received to date and then share a initial draft with MSIFN for review, comment and to add in any additional information and guide further discussion. CNSC staff would aim to have this initial draft to MSIFN by early February. CNSC staff are open to having a DNNP specific meeting prior to then, to discuss MSIFN's concerns and any additional information regarding specific impacts on rights. We could also include OPG in this

meeting to discuss potential commitments and mitigation measures to address the concerns being raised. Please let me know if you would like to have this meeting!

We also want to reiterate that we remain open to supporting a longer-term initiative with interested Williams Treaties First Nations to gather Indigenous Knowledge and land-use data that can help inform future RIAs (as appropriate), ongoing monitoring, follow up and oversight of the DNNP, should it proceed to ensure that MSIFN's rights and interests are protected. We look forward to receiving MSIFN's letter on this topic and working collaboratively together to find a path forward on this important work and report.

Thank you,
Laura DeCoste
[she, her, elle]

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Intérimaire Agente principale des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
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From:	Levine, Adam
To:	Samantha Shrubsole; Don Richardson;
Cc:	Kelly LaRocca; Jeff Forbes; Sylvia Coleman; ian.jacobsen@opg.com; Consultation; DeCoste, Laura; McCavitt, Keely; Carter, Blair; Cattrysse, Clare; Kwamena, Nana-Owusua; Broeders, Mark; Eaton, Sarah; Simon, Nicole; Way, Jessica; Martin, Ana;
Subject:	RE: Preliminary Response to CNSC Rights Impact Assessment Framework
Sent:	2024-01-24 2:41:12 PM

Hi Sam, Don and MSIFN leadership, it was great seeing many of you at the DNNP Commission hearing yesterday. As discussed, please find attached our detailed response to the letter, questions and concerns MSIFN has raised regarding the CNSC's approach to the Rights Impact Assessment framework and approach for the DNNP project and consultation process as outlined in your letter to us dated January 11, 2024. We look forward to following up on this important topic and working together on finding an appropriate path forward in ensuring that we can collaboratively document, assess, address and communicate MSIFN's concerns with regards to potential impacts to the Nation's rights and interests in relation to the DNNP licence to construct application to the Commission. Thanks and talk soon,

Adam

From: Samantha Shrubsole <sshrubsole@scugogfirstnation.com>
Sent: January 11, 2024 1:21 PM
To: Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; ian.jacobsen@opg.com
Cc: Don Richardson <drichardson@scugogfirstnation.com>; Kelly LaRocca <klarocca@scugogfirstnation.com>; Jeff Forbes <jforbes@scugogfirstnation.com>; Sylvia Coleman <scoleman@scugogfirstnation.com>; Consultation <consultation@scugogfirstnation.com>; DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Subject: Preliminary Response to CNSC Rights Impact Assessment Framework

Hello,

Please see attached letter from the Mississaugas of Scugog Island First Nation (MSIFN).

This is further to MSIFN's commitment to provide our response to CNSC's Rights Impact Assessment ("RIA") Framework.

Thank you,
Sam

_____

Samantha Shrubsole
Consultation Advisor
Mississaugas of Scugog Island First Nation

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January 11, 2024

Canadian Nuclear Safety Commission
280 Slater Street, P.O. Box 1046, Station B
Ottawa, ON K1P 5S91

Ontario Power Generation Inc.
700 University Avenue
Toronto, ON M5G 1X6

To the Attention of:

Adam Levine
Team Leader
Aboriginal Consultation and Participant Funding
via Email: adam.levine@cnsc-ccsn.gc.ca

Ian Jacobsen
Director, Indigenous Relations

ian.jacobsen@opg.com

Re: Preliminary Response to CNSC Rights Impact Assessment Framework

This is further to the Mississaugas of Scugog Island First Nation's (MSIFN) commitment to provide our response to CNSC's Rights Impact Assessment ("**RIA**") Framework as provided to MSIFN on October 10, 2023. We set out our response below as a series of discussion points and suggested revisions. This letter has been reviewed and approved for transmission by MSIFN Chief and Council.

MSIFN is also in receipt of CNSC staff's email of January 11, 2024 indicating that the CNSC's proposed RIA for the Darlington New Nuclear Project (DNNP) is "not precedent setting as the RIA framework would be flexible and tailored to each specific future project or decision as well as the Indigenous Nation or community that is being consulted". MSIFN respectfully disagrees with CNSC staff's assertion. The act of conducting an RIA for the DNNP twelve years after the EA for the project was approved, in the absence of meaningful consultation on the development of the RIA, is most definitely precedent setting.

1) Consultation on the development of the RIA

Based on *Morton v. Canada (Fisheries and Oceans)*[1] and given the potential of the RIA Framework to confine the discussion of impacts on protected aboriginal and treaty rights to environmental concerns, we believe that CNSC was legally obligated to develop the RIA Framework in consultation with our First Nation and others. We are not aware that any such consultation took place, and certainly there was no consultation with MSIFN. Based on the CNSC and OPG commitments reflected in the Policy Statement: CNSC's Commitment to Indigenous

[1] *Morton v. Canada (Fisheries and Oceans)*, 2019 FC 143.

Consultation and Engagement[2], and OPG Reconciliation Action Plan,[3] we hope the present dialogue is an opportunity to incorporate what we see as essential revisions to the RIA Framework.

2) **Variance of the CNSC RIA Framework from the Impact Assessment Agency of Canada's Guidance: Assessment of Potential Impacts on the Rights of Indigenous Peoples[4]?**

Natural Resources and Climate Change Canada provides guidance and a methodology for addressing potential impacts on the rights of Indigenous peoples as required in an impact assessment of a designated project under the *Impact Assessment Act*. Under that statute, physical activities that are regulated under the *Nuclear Safety and Control Act* and the *Canadian Energy Regulator Act* are "designated projects" to which the IAA guidelines apply. Furthermore, on October 21, 2019, the CNSC signed a Memorandum of Understanding on Integrated Impact Assessments Under the *Impact Assessment Act* with the Impact Assessment Agency of Canada.[5]

While we do not fully endorse the IAA guidelines, we ask that you provide the authority and rationale for the development and adoption of an alternative framework.

3) **Missing First Task**

Both the NCCC and CNSC methodologies omit what, in our view, should be Step 1 in any consultation: Seeking a consensus with potentially-affected First Nations on the project description. If the proponent and the Indigenous parties disagree on the proper description of the proposed Crown and proponent conduct which may have impact on protected Indigenous rights and valued components and the objectives of the project and the potential for future projects which could expand those impacts, any consultation is likely to be at cross purposes. Please confirm that this initial step will be added to the CNSC RIA Framework.

4) **RIA Step 1: Identification of potentially impacted rights and interests**

This step is out of sequence: we submit that it is essential to define the baseline conditions before potential impacts can be identified.

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[2] https://nuclearsafety.gc.ca/eng/resources/aboriginal-consultation/indigenous-policy-statement.cfm
[3] https://www.opg.com/about-us/our-commitments/indigenous-relations/reconciliation-action-plan/
[4]https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/guidance-assessment-potential-impacts-rights-indigenous-peoples.html
[5]https://nuclearsafety.gc.ca/eng/acts-and-regulations/memorandums-of-understanding/mou-impact-assessment-agency-canada.cfm#sec17

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5) RIA Step 2: Identification of current baseline conditions including cumulative effects, current territorial capacity and historical context

The RIA characterization of baseline conditions for an Indigenous consultation is extremely problematic and requires extensive revision.

Issue 1: The term "current baseline conditions" confuses at least three separate issues: (1) the environmental conditions baseline; (2) the impacts on the protected rights of the affected First Nations, and (3) the impacts on IAA "VC's" – valued components including environmental, health, social, economic and potentially other elements of the natural and human environment. In other words, there are three separate baselines to consider, which is of particular importance with respect to any project which may have health impacts. These three baselines may differ – in fact they are almost certain to differ because, as the caselaw establishes, cumulative effects must be taken into account in assessing impacts on rights.[6]

Furthermore, a description of the past state of a VC should be included in the baseline description of each VC, inclusive of Indigenous Knowledge of that past state, demonstrating how the state of the VC has evolved over time. Setting past temporal boundaries for gathering of past data and Indigenous knowledge will provide a more meaningful picture of the VC allowing understanding of whether the baseline condition is representative or is at a particular point in a cycle or trend. Relevant past information includes scientific information, historical data and maps, and Indigenous knowledge about the natural variability, drivers of change and historical shifts to provide an understanding of VCs from past points in time to the present, showing the evolution of the VC and providing important information for decommissioning and site repurposing scenarios.

The Canadian Impact Assessment Agency's guidelines on tailored impact statements provides:

> All interconnections between human health and other VCs and interactions between effects must be described. A detailed HIA [health impact assessment] inclusive of other reasonably foreseeable future projects ***[emphasis added]*** would be appropriate to capture potential positive and adverse effects on social factors and economic factors (and where applicable cultural factors) in addition to the biophysical environmental factors.
>
> (https://iaac-aeic.gc.ca/050/documents/p80184/137378E.pdf)

Issue 2: A similar conceptual confusion is evident in the reference in this step to "current territorial capacity": just as there are separate baselines for environmental conditions, rights impacts, and VC's, the "territorial capacity" in each of these three contexts should be separately considered.

[6] *Yahey v. British Columbia*, 2021 BCSC 1287.

Issue 3: CNSC's references to "mitigation and accommodation" – which effectively treats accommodation as an alternative to environmental mitigation – suggests a misunderstanding of the accommodation concept. The requirement to accommodate does not arise from residual impacts on the environment: it arises from impacts on protected rights and VC's, regardless of whether there are residual effects after mitigation. We suggest reserving the concept of accommodation for measures to compensate the affected First Nation for the totality of project impacts on rights and VC's, and deleting it from this step, and others, where it is intended as a remedy for deltas from the environmental baseline.

Issue 4: While the reference to "cumulative effects" in this step is positive, the language used does not show that the concept has been fully integrated into the proposed approach. For example, CNSC does not appear to have contemplated that mitigation may restore the environmental baseline but, because of cumulative effects, impacts on VC's and protected rights may still require accommodation. Mitigation itself is capable of having an impact. Further, all anticipated future projects which may add impacts must be added as perspective to the evaluation. This is especially important for multi-dimensional nuclear sites in the Greater Golden Horseshoe (GGH) provincial planning area and the western portion of Lake Ontario where a multitude of current activities and future projects create complex cumulative effects scenarios, and impacts on VC's and impacts on protected rights.

We request that CNSC amend Step 2 in its RIA Framework to correct all of these defects. Note that changes to Step 2 will need to be reflected in corresponding changes to subsequent steps.

6) **RIA Step 4: Identification of severity of potential project interactions with identified rights and interests**

All the comments above on separate baselines for environmental conditions, VC's and protected rights apply to this step. We recommend adding "including cumulative effects" immediately before the closing parenthesis mark.

Secondly, the terminology "Identification of severity" is completely inappropriate. Questions of severity are matters of judgment, not identification, and that the word "Determination" should be substituted for "Identification." Further, we recommend expressly adding that severity must be addressed from the First Nation's perspective.[7]

[7] *Haida Nation v British Columbia (Minister of Forests),* [2004] 3 S.C.R. 511

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7) **RIA Step 5: Identification of potential mitigation and/or accommodation measures to address identified potential project interactions with identified rights and interests**

As noted above re Step 2, taking both mitigation and accommodation into account before determining whether there are residual project effects makes sense only in the context of a single baseline – environmental conditions. We recommend broadening the impact statement to include impacts on VC's and protected rights in addition to residual environmental impacts, and reserving the concept of accommodation for the remedy to all those residual effects collectively. We suggest deleting the reference to accommodation in this section, making similar changes to slides 6 and 7.

Example Sections of an RIA

All of the comments above apply to the Examples slides in the RIA Framework.

Please let us know if you have any questions with respect to the issues and solutions that we have outlined above for the CNSC's RIA Framework and we are pleased to discuss the same with you.

Sincerely,

Don Richardson, Ph.D.
Consultation Advisor
Mississaugas of Scugog Island First Nation
www.scugogfirstnation.com
drichardson@scugogfirstnation.com

January 24, 2024 e-Doc 7203425

Don Richardson, Ph.D
Consultation Advisor
Mississaugas of Scugog Island First Nation
drichardson@scugogfirstnation.com

Dear Don Richardson:

Thank you for your letter dated January 11, 2024, regarding the Mississaugas of Scugog Island First Nation's (MSIFN) concerns and comments related to the Canadian Nuclear Safety Commission's (CNSC) Rights Impact Assessment (RIA) Framework and approach for the Darlington New Nuclear Project (DNNP). The CNSC appreciates the ongoing dialogue around the approach to assessing impacts on Indigenous and /or Treaty rights and appropriately documenting and assessing MSIFN's specific concerns with regards to potential impacts on their rights and interests as it relates to Ontario Power Generation's (OPG) Licence to Construct application for the DNNP.

CNSC staff presented the CNSC's RIA framework during the October 2023 MSIFN/CNSC monthly meeting, in relation to the DNNP. The RIA framework is meant to be flexible and was presented as a way to start discussions on the approach to assessing the specific concerns MSIFN has recently raised regarding the DNNP's potential impacts on MSIFN rights and interests. Following this meeting, CNSC staff shared examples of RIAs that the CNSC had previously conducted and information on next steps for a DNNP specific RIA with MSIFN. CNSC staff have continued to raise and discuss the approach to conducting an RIA, the expected timelines and how MSIFN would like to collaborate on the process for the DNNP during each subsequent MSIFN/CNSC monthly meeting, as well as at a separate meeting on October 17th, 2023, regarding the DNNP and at the November in-person meeting with MSIFN's leadership in MSIFN's community. CNSC staff shared additional information in writing about the CNSC's perspective on the DNNP RIA and a proposed path forward on January 10, 2024.

CNSC staff's assessment and recommendations related to any potential impacts on rights from a Commission decision regarding a nuclear project and license application are typically included or appended to the CNSC's Commission Member Documents which are submitted to the Commission to support their decision-making process. RIAs are a new best practice across the Federal Government for major projects, decisions and actions that could potentially impact Indigenous and/or treaty rights. They are an

analytical tool to pull together existing information and put a specific focus on a projects or decisions potential impacts on rights, as opposed to just impacts on the biophysical environment and human health. The RIA is not a specific regulatory or legal requirement, but rather a process and report to provide the Commission with clear and complete information and analysis regarding potential impacts to rights to inform their decisions. The RIA process provides greater opportunity for collaboration with the potentially impacted Indigenous Nation or community on the content of the assessment and recommendations to the Commission. The CNSC's approach to RIAs is consistent with the Government of Canada's commitments with respect to recognition, protection, and upholding of the rights of Indigenous peoples and is in line with best practices and approaches already developed and used by other Departments and Agencies, including the Impact Assessment Agency of Canada: https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/guidance-assessment-potential-impacts-rights-indigenous-peoples.html.

CNSC staff acknowledge MSIFN's view that the RIA should have been conducted during the Environmental Assessment (EA) for the DNNP, which was completed in 2011. Potential impacts on rights were considered during the EA by the CNSC, the Canadian Environmental Assessment Agency of Canada and the Joint Review Panel. At the time of the EA and JRP hearings, no concerns about potential impacts on rights were raised by MSIFN and other Williams Treaties First Nations, and the JRP's assessment based on the EA and all facts and evidence brought forward during the hearing process was that they did not expect the DNNP to result in significant adverse effects on current use of land and resources for traditional purposes by "Aboriginal" persons as per section 6.4 of the JRP environmental assessment report for the DNNP. . CNSC staff acknowledge that consultation and engagement expectations and requirements have changed since the EA, including the signing of the Williams Treaties Settlement Agreement in 2018. In addition, as part of the consultation process for the applicability of the EA to OPG's chosen technology and the Licence to Construct application for the DNNP, MSIFN and other Williams Treaties First Nations have now more recently raised specific concerns regarding the potential for the construction and operation of the DNNP to lead to new impacts on their rights and interests. As a result, CNSC staff are offering to collaborate on RIAs with potentially impacted Williams Treaties First Nations, including MSIFN, at this stage of the process to ensure that the CNSC is able to better understand and assess these concerns based on the information available at this time. This proposed approach is part of the CNSC's commitment to consider current best practices as part of the DNNP regulatory and consultation processes.

If the DNNP proceeds to a Licence to Construct hearing, CNSC staff will be required to include a recommendation in the Commission Member Document on whether the

DNNP is expected to cause impacts to Indigenous and/or treaty rights and an effective, transparent and collaborative way to do so is through the proposed approach to RIA. CNSC staff remain committed to working collaboratively with MSIFN on this assessment. In addition, as previously discussed, CNSC staff are fully committed to working with MSIFN and other Williams Treaties First Nations on supporting an Indigenous Knowledge and Land Use study specific to the DNNP to help gather more specific information and data regarding Williams Treaties First Nations rights and interests that could be potentially impacted by the DNNP and other projects in the treaty territory. As discussed, this approach would ensure that in the current RIA, both CNSC staff and MISFN would be able to summarize the specific concerns regarding any existing gaps or limitations in knowledge and data about rights practiced, with the recommendation to move forward together, with OPG, to complete these studies. The results of these studies can then help to inform an adaptive management approach and EA follow-up monitoring program, which will ensure the DNNP project and related activities would be protective of rights and interests. Including the RIA in CNSC staff's CMD is an appropriate approach and tool to capture this information and collectively submit this recommendation to the Commission.

As mentioned in the CNSC's January 11th email, CNSC staff propose that CNSC staff draft the first version of the assessment, based on all of the information received and available to date and then share an initial draft with MSIFN for review, comment and for MSIFN add in any additional information, in order to guide further discussion. CNSC staff would aim to have this initial draft to MSIFN by early February 2024. CNSC staff are open to having a DNNP specific meeting prior to then, to discuss MSIFN's concerns and any additional information MSIFN currently has regarding specific impacts on rights in relation to the DNNP.

In the attachment to this letter, CNSC staff have provided responses to MSIFN's key themes and concerns raised in MSIFN's letter. CNSC staff look forward to continuing to discuss the RIA process and collaborating on a path forward for the RIA and consultations on the DNNP.

Sincerely,

Adam Levine,
Team Lead, Indigenous Consultation and Participant Funding
Canadian Nuclear Safety Commission
Adam.levine@cnsc-ccsn.gc.ca

Cc:

Kelly LaRocca, MSIFN (klarocca@scugogfirstnation.com)
Jeff Forbes, MSIFN (jforbes@scugogfirstnation.com)
Sylvia Coleman, MSIFN (scoleman@scugogfirstnation.com)
General Consultation, MSIFN (consultation@scugogfirstnation.com)
Laura DeCoste, CNSC (laura.decoste@cnsc-ccsn.gc.ca)
Ian Jacobson, Ontario Power Generation (ian.jacobsen@opg.com)

Appendix A: Detailed Responses to MSIFN's Comments and Concerns Regarding the CNSC's Approach and Process for Rights Impact Assessments

MSIFN Comment or Concern	CNSC Response
MSIFN raised the concern that the CNSC was legally obligated to develop the RIA Framework in consultation with MSIFN and other Indigenous Nations and communities, noting the concern that the RIA may confine discussions of impacts to environmental concerns. MSIFN raised concerns regarding the difference between the CNSC's RIA framework compared to the Impact Assessment Agency of Canada's guidance for assessing potential impacts on rights. MSIFN noted that physical activities that are regulated under the NSCA are designated projects to which the IAA guidelines apply. Furthermore, on October 21, 2019, the CNSC signed a Memorandum of Understanding on Integrated Impact Assessments Under the *Impact Assessment Act* with the Impact Assessment Agency of Canada	The Impact Assessment Act only applies in cases where the projects are designated under the Physical Activities Regulations (Physical Activities Regulations (justice.gc.ca)), or by the Impact Assessment Agency of Canada. Any nuclear projects that are not considered "designated" are regulated by the CNSC as per the Nuclear Safety and Control Act (NSCA) and its regulations. The CNSC has the authority to maintain its own framework to govern the regulation of non-designated nuclear projects. Specifically with regards to the DNNP, the *Impact Assessment Act* does not apply, as this project has already undergone an Environmental Assessment under the former *Canadian Environmental Assessment Act* of 1992. The EA for the project is still valid and therefore, there is no obligation to undertake the requirements under the IAA. If the DNNP project proceeds and undergoes a licensing process for a licence to construct , it will be regulated under the NSCA. The CNSC conducts RIAs in relation to projects and regulatory processes that may impact the exercise of potential or established Indigenous and/or treaty rights, for which the CNSC is the lead Crown Agency and decision-maker. This includes decisions being contemplated by the Commission under the Canadian Environmental Assessment Act (2012) and the NSCA. The CNSC has developed an approach to RIAs that is based on best practices across the Federal Government for the assessment of potential impacts to rights in relation to projects, including the Impact Assessment Agency of Canada's guidance found here: https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/guidance-assessment-potential-impacts-rights-indigenous-peoples.html

	As an agent of the Crown, the CNSC is committed to upholding the honour of the Crown and fulfilling its duty to consult and accommodate obligations for decisions and activities that could potentially impact the exercise of Indigenous and/or treaty rights. RIAs are not a regulatory or legal requirement under the NSCA or CEAA 2012, rather they are a policy tool that are used to collaboratively assess if there are expected to be any significant adverse impacts to Indigenous and/or Treaty rights due to a proposed project or activity and help inform the Commission's decision-making. The RIA process is meant to be flexible and tailored to each specific project or decision as well as the Indigenous Nation or community that is being consulted. The scope of potential impacts considered in the RIA may go beyond the scope of legislative frameworks for assessing environmental impacts depending on the specific concerns being raised by the potentially impacted Indigenous Nation or community. Impacts to Indigenous and/or treaty rights are not restricted to the definition of environmental effects in CEAA 2012 or other legislation, as a result of the proposed project or licence application. The purpose of the RIA is to ensure that the CNSC is able to conduct a specific analysis based on available information related to a project's potential impacts on Indigenous and/or treaty rights and not just on the project's potential impacts on the environment or people. RIAs are a way to document and assess the concerns being raised by Indigenous Nations and communities regarding potential impacts on their rights as a result of a proposed nuclear project and communicate that assessment to the Commission in a clear, transparent and collaborative way.
MSIFN comments that Indigenous Nations and communities should be first consulted	As per the requirements and guidance in REGDOC 3.2.2: Indigenous Engagement, proponents are encouraged to conduct early engagement and provide information to Indigenous Nations and communities about the nature

on the project description of a proposed project. MSIFN notes that if there is disagreement on the proper description of the proposed Crown and proponent conduct which may have impact on protected Indigenous rights and valued components and the objectives of the project and the potential for future projects which could expand those impacts, any consultation is likely to be at cross purposes.	and scope of the activity described in the licence application and its potential impact on the environment, Indigenous and/or treaty rights and possible mitigation measures if identified. As a best practice it is expected that proponents engage with potentially impacted Indigenous Nations and communities on their proposed project to ensure that the communities perspectives, rights, interests and priorities can be incorporated into the project description, plan and design before a licence application and project description is submitted to the CNSC. When the CNSC receives a licence application/project description the CNSC will review the submissions and ensure that the proponent has conducted early engagement, identified the appropriate Indigenous Nations and communities, started to build relationships and partnerships and identified any potential issues and concerns raised by Indigenous Nations and communities, as per the requirements and guidance of REGDOC 3.2.2. In the RIA report, a brief project description is included in the introduction chapter, which is a summary based on the project description that was submitted to the CNSC early on in the regulatory review process.
MSIFN indicates that Step 1 Identification of potentially impacted rights and interests is out of sequence: we submit that it is essential to define the baseline conditions before potential impacts can be identified.	CNSC staff would like to clarify that the objective of Step 1 of an RIA is to identify and understand the rights and interests in the area of the proposed project. This could include through publicly available information such as treaties, agreements and previous regulatory processes as well as information provided by the rights-holding Indigenous Nation and community about their rights and how the community exercises its rights. The goal is for the potentially impacted Indigenous Nation to provide a summary of their rights and interests in the vicinity of the project to help CNSC staff understand the

	nature, scope and extent of rights. This is important context and information to include the report before talking about project specific impact pathways. This initial step does not include an assessment of the project's potential impacts on the identified rights and interests, which is the focus and purpose of step 3 of the RIA process.
MSIFN raises concerns that the current baseline conditions confused at least three separate issues: (1) the environmental conditions baseline; (2) the impacts on the protected rights of the affected First Nations, and (3) the impacts on IAA "VC's" – valued components including environmental, health, social, economic and potentially other elements of the natural and human environment. MSIFN comments that territorial capacity should be considered for each of the above contexts.	The baseline being considered in an RIA is defined as: the current environmental conditions, present-day exercise of rights by the Indigenous Nation or community, and existing activities that have affected or could affect the conditions that support or limit the Indigenous Nation or community's meaningful exercise of rights. The baseline for an RIA should consider the conditions necessary to allow a community to continue to exercise its rights and how historical and current cumulative effects may already impact those conditions, or how future foreseeable projects may have an impact (i.e. Territorial capacity). This can include additional context such as the Nation's perspectives on the importance, value, uniqueness of an area as well as territorial capacity – which refers to the ability of the Indigenous Nation or community to exercise their rights in their preferred manner. An RIA should also consider the historical and future context in which rights are practiced when evaluating the magnitude of potential project impacts relative to the established baseline. The RIA and consultation process to fulfill the Duty to Consult is triggered by the decisions being contemplated by the Commission under CEAA 2012 and/or the NSCA. It is separate but complementary to these processes and decisions; the Commission makes its decision/recommendations on the Duty to Consult as part of the same Record of Decision as the CEAA 2012 and/or NSCA decision.

	- Environmental assessments are conducted to assess if there are any significant adverse environmental effects due to the project - Technical assessments for licensing are conducted to determine if an applicant is qualified and that humans and the environment are protected - Rights Impact Assessments are conducted to assess if there are any significant adverse impacts to Indigenous and/or Treaty rights due to a proposed project or activity based on existing information from the EA/technical assessments, as well as information provided by potentially impacted Indigenous Nations and communities The purpose of the RIA is to consider all information available (such as publicly available information, information shared from the Indigenous Nation or community, Indigenous knowledge, traditional land use studies, baseline biophysical information) to identify and understand what conditions are required for the Indigenous Nation or community to exercise their rights and then assess how those conditions may be impacted by a specific project, in order to protect the ability to practice rights. The RIA is not meant to be a completely separate environmental impact assessment, it is an analytical tool and summary report to help support the Commission's decision making with regards to fulfilling the Duty to Consult and where appropriate Accommodate obligations for any project/licensing application that could potentially impact Indigenous and/or treaty rights.
MSIFN is concerned that CNSC's references to "mitigation and accommodation" – which effectively treats accommodation as an alternative to environmental mitigation – suggests a misunderstanding of the	The Crown has a Duty to Consult, and, where appropriate, accommodate when the Crown contemplates conduct that might adversely impact potential or established Indigenous and/ or treaty rights. Accommodation refers specifically to a measure to avoid, minimize or compensate for adverse impacts on rights that is owed based on the Crown's Duty to Consult.

accommodation concept. The requirement to accommodate does not arise from residual impacts on the environment: it arises from impacts on protected rights and VC's, regardless of whether there are residual effects after mitigation. We suggest reserving the concept of accommodation for measures to compensate the affected First Nation for the totality of project impacts on rights and VC's MSIFN raises concerns that CNSC does not appear to have contemplated that mitigation may restore the environmental baseline but, because of cumulative effects, impacts on VC's and protected rights may still require accommodation.	Accommodation is part of the Duty to Consult, grounded in the constitutional obligations of the Crown. There is no one agreed upon definition of accommodations and can include mitigation, off-sets, changes in the timing, location and scope of projects, commitments for ongoing engagement and collaboration, ongoing collaborative monitoring activities, capacity building and funding/compensation. CNSC staff's view is that the steps in the RIA process are meant to be iterative, with discussions being had about any potential mitigation or accommodation measures throughout the process, as impacts to Indigenous and/or Treaty rights are identified and as appropriate. CNSC staff note that in identifying mitigation measures the following strategy of a sequential identification of mitigation and/ or accommodation measures to address potential impacts to Indigenous and/ or Treaty rights are typically undertaken: • Primary mitigation: those that are identified by proponents in their licence application/and or EIS documentation to address biophysical and environmental impacts (e.g. adjusting the timing of construction work to avoid important harvesting events and activities). • Secondary mitigation: additional measures offered by the proponent and/or the Crown (including the CNSC) in consultation and collaboration with potentially impacted Indigenous Nations and communities to address concerns raised by Indigenous Nations and communities including potential impacts on rights (e.g. engagement and collaboration with Indigenous Nations and communities on follow-up and monitoring programs/activities).

	• Tertiary mitigation/accommodation: complementary measures to address potential impacts on rights that go beyond the mandate and powers of the CNSC. Requires leadership and coordination from other government departments and agencies. This may happen outside of the RIA process but should not impact processes or timelines for a specific EA or regulatory process (e.g. the establishment of a new protected area in collaboration with an Indigenous Nation or community). The first two tiers of accommodations/mitigations are typically within the CNSC's mandate and oversight capabilities and would therefore be considered first in the assessment and through discussions with potentially impacted Indigenous Nation and the proponent, determine if those measures are adequate to manage and address the identified impacts on rights identified by the Nation. However, should the Indigenous Nation indicate that those measures are still inadequate to address their concerns and the impacts to their rights are so severe that there remains residual impacts as a result of the proposed project, that is when there is the option to explore the third tier of accommodations, which would go beyond the CNSC's mandate and need to involve potentially other Government Departments and Agencies, Provincial Governments, industry and others to identify solutions and accommodations as appropriate.
MSIFN raises concern about the terminology "identification of severity" and requests that "determination should be used instead. MSIFN notes that that severity must be addressed from the First Nation's perspective	CNSC staff are open to using the term "determination" as opposed to identification in this context in the RIA. The goal of the RIA is to come to a mutual understanding of the severity of any identified potential impacts on potential or established rights and interests, as a result of a proposed project, as well as to identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts, and communicate the process,

	outcomes and recommendations in a collaborative, mutually agreeable way to the Commission as part of its decision-making process. In cases where the CNSC and the Indigenous Nation and community have differing views, both perspectives would be included in the report and submitted to the Commission to help inform their decision making.

From:	Sam Shrubsole
To:	Levine, Adam; DeCoste, Laura;
Cc:	Don Richardson; Kelly LaRocca; Rob Lukacs; Kayla Wright; relationships@4directionsconservation.com; Julie Kapyrka; Consultation; McCavitt, Keely; Interventions / Interventions (CNSC/CCSN); Eaton, Sarah; Simon, Nicole; Cattrysse, Clare; Dormer, Natalie; Martin, Ana; Broeders, Mark; Emily Ferguson;
Subject:	Re: Notice of CNSC staff's update on consultation and engagement related to the DNNP requested by the Commission
Attachments:	2024-03-04_MSIFN_SecondResponse_CNSC.pdf
Sent:	2024-03-04 4:27:59 PM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hello Adam,

Please see attached letter response from Chief Kelly LaRocca regarding your email sent on February 16th.

Separately, on February 29 we received an email containing draft issues tracking tables which CNSC staff said will be included as an annex to the Commission Member Document for the DNNP License to Construct application, should the project proceed. MSIFN staff will respond to that email in due course.

Thank you,
Sam

Samantha Shrubsole
Consultation Advisor to MSIFN

From: Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>
Sent: Friday, February 16, 2024 9:52 AM
To: Samantha Shrubsole <sshrubsole@scugogfirstnation.com>; DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Cc: Don Richardson <drichardson@scugogfirstnation.com>; Kelly LaRocca <kelly.larocca@msifn.ca>; Rob Lukacs <rlukacs@scugogfirstnation.com>; Kayla Wright <kayla@francischua.com>; relationships@4directionsconservation.com <relationships@4directionsconservation.com>; Julie Kapyrka <jkapyrka@alderville.ca>; Consultation <consultation@scugogfirstnation.com>; McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>; Interventions / Interventions (CNSC/CCSN) <Interventions@cnsc-ccsn.gc.ca>; Eaton, Sarah <Sarah.Eaton@cnsc-ccsn.gc.ca>; Simon, Nicole <Nicole.Simon@cnsc-ccsn.gc.ca>; Cattrysse, Clare <clare.cattrysse@cnsc-ccsn.gc.ca>; Dormer, Natalie <natalie.dormer@cnsc-ccsn.gc.ca>; Martin, Ana <ana.martinalvarez@cnsc-ccsn.gc.ca>; Broeders, Mark <Mark.Broeders@cnsc-ccsn.gc.ca>

Subject: RE: Notice of CNSC staff's update on consultation and engagement related to the DNNP requested by the Commission

Good morning everyone! Thank you for the letter. To clarify the situation and address the concerns outlined in the attached letter, CNSC staff and OPG were directed by the Commission on the final day of the DNNP hearing (January 25th) by the Commission to provide additional information regarding engagement activities leading up to the January Commission hearing that covered the time period from when CNSC staff submitted the Commission Member Document for the DNNP hearing (September 2013) up until the hearing in January 2024. The Commission requested this information from CNSC staff and OPG to be submitted to them as soon as possible.

The scope of the request did not include reiterating or summarizing the requests and submissions from any interveners including MSIFN as that information was already provided on the record to the Commission. For transparency we wanted to ensure that MSIFN and other Nations had the information we were requested to submit to the Commission, as per Laura's email to you and other Nations with our submission.

Moving forward, as we have previously discussed and committed to, we will be sharing CNSC staff documentation and reports related to MSIFN for the DNNP Licence to Construct application for review and input including our CMD section related to MSIFN, MSIFN specific issues and concerns tables, and the MSIFN specific Rights Impact Assessment summary report.

We are currently working on updating those documents to reflect MSIFN's submissions to the Commission for the January DNNP hearing and will be providing those to you soon for review and input. We look forward to our ongoing collaboration with MSIFN on the DNNP and other nuclear projects in your territory. We can certainly discuss this further at our next monthly meeting and I have copied in Keely to ensure she can add this topic onto our agenda. I have also copied in the Commission Registry to see if they can share the transcripts of the January DNNP hearing with you and point you towards the section where the Commission directed staff for the additional engagement update to be submitted to them, as well as any other details pertaining to the Commission's requests and responding to your concerns. Thanks and hope everyone has a good weekend!

Adam

From: Samantha Shrubsole <sshrubsole@scugogfirstnation.com>
Sent: Friday, February 16, 2024 9:34 AM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Cc: Don Richardson <drichardson@scugogfirstnation.com>; Kelly LaRocca <kelly.larocca@msifn.ca>; Rob Lukacs <rlukacs@scugogfirstnation.com>; Kayla Wright <kayla@francischua.com>; relationships@4directionsconservation.com; Julie Kapyrka <jkapyrka@alderville.ca>; Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; Consultation <consultation@scugogfirstnation.com>
Subject: Re: Notice of CNSC staff's update on consultation and engagement related to the DNNP requested by the Commission

Hi Laura,

See attached letter response from Chief Kelly LaRocca regarding the CNSC staff's update on consultation and engagement related to the DNNP, requested by

the Commission.

I am also Cc'ing representatives for Curve Lake, Hiawatha, and Alderville First Nations.

Thank you,
Sam

_____
Samantha Shrubsole
Consultation Advisor to MSIFN

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Friday, February 2, 2024 3:30 PM
Subject: Notice of CNSC staff's update on consultation and engagement related to the DNNP requested by the Commission

Hello all!

At the January 23 -25th DNNP hearing regarding the applicability of the environmental assessment to the chosen technology, the Commission requested that CNSC staff submit a report that provides an update on the consultation and engagement efforts related to the DNNP. Please find the report that was submitted to the Commission, as per the request, attached for your information. The report will also be posted on the CNSC's website.

I would like to note that we will be looking to work with your community in the coming months to update and refine the information for the Commission Member Document for the DNNP Licence to Construct application, should the project proceed. This would include reviewing and co-drafting sections of the CMD and issues tracking tables and ensuring your community's knowledge, views and perspectives are reflected in the documents. We are open to having continued discussions on your concerns and comments and working to address them to the extent possible.

Please let me know if you have any questions, or if you would like to discuss this further!

Thank you,

Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Intérimaire Agente principale des politiques, Division des relations avec les Autochtones et les parties intéressées
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www.scugogfirstnation.com

February 16, 2024

Laura DeCoste
Canadian Nuclear Safety Commission
Delivered VIA Email: laura.decoste@cnsc-ccsn.gc.ca

RE: **Notice of CNSC staff's update on consultation and engagement related to the DNNP requested by the Commission**

Dear Laura,

This letter is in response to the correspondence titled "*Notice of CNSC staff's update on consultation and engagement related to the DNNP requested by the Commission*" which was sent to the Mississaugas of Scugog Island First Nation (MSIFN) on February 2, 2024.

Upon review of the attached "*CNSC staff update on Consultation and Engagement with Indigenous Nations and communities on the Applicability of the Darlington New Nuclear Project (DNNP) Environmental Assessment to OPG's Chosen Technology* (EDOCS #7212032)", we express our disappointment and concern that the list of commitments raised by Michi Saagiig Nations have not been addressed. The concerns and requests outlined in MSIFN's written intervention to the Commission, as well as in the joint oral intervention presented by MSIFN, Curve Lake, and Hiawatha First Nations on January 23rd, have not been acknowledged or documented in this CNSC staff update.

The staff update and the summary of consultation and engagement fail to include the list of commitments sought from the Commission and neglect to articulate any impacts on Treaty Rights. The list of commitments and requests made by MSIFN, Curve Lake, and Hiawatha First Nations remains unaddressed by CNSC staff and must be addressed by the Commission.

Furthermore, we were unaware that this staff update was being drafted or sent to the Commissioners. MSIFN and the other Nations were deprived of the opportunity to review the letter or provide input regarding the content concerning consultation and engagement ahead of time. This lack of transparency creates an imbalanced record of engagement, requiring the

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Nations to now allocate time to rectify the agenda rather than collaborate on a submission together.

We wish to correct the record, and ask that the Michi Saagiig list of commitments and requests for accommodations be addressed by both CNSC staff and the Commission.

Miigwech,

_____

Chief Kelly LaRocca

Mississaugas of Scugog Island First Nation

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March 4, 2024

Adam Levine
Canadian Nuclear Safety Commission
Via email: adam.levine@cnsc-ccsn.gc.ca

Re: Re: Notice of CNSC staff's update on consultation and engagement related to the DNNP requested by the Commission

Dear Adam,

Thank you for the CNSC's response to MSIFN's letter sent on February 16, 2024. This letter is in response to the email correspondence MSIFN received from you on February 23, 2024.

Separately, on February 29, 2024 we received an email containing draft issues tracking tables which CNSC staff said will be included as an annex to the Commission Member Document (CMD) for the DNNP Licence to Construct application, should the project proceed. MSIFN staff will respond to that email in due course.

We understand that the Government of Canada recognizes that the honour of the Crown guides the conduct of the Crown in all its dealings with First Nation rights-holders. Furthermore, the Government of Canada recognizes that it must uphold the honour of the Crown, which requires the federal government and its departments, agencies, and officials to act with honour, integrity, good faith and fairness in all of its dealings with Indigenous peoples. We ask CNSC staff to reflect on their role in upholding the honour of the Crown with respect to staff correspondence with the Commission and MSIFN's experiences as noted below.

We appreciate the clarifications provided in your February 16, 2024 email response. However, we wish to express our ongoing concern that the requests outlined by MSIFN on multiple

occasions were not acknowledged or documented in the CNSC staff update on Consultation and Engagement for the Commissioners. Those concerns raised were in direct relation to the public hearing for the Commission's consideration of OPG's application of the DNNP environmental assessment and plant parameter envelope to selected reactor technology. The staff update includes comments selected by CNSC staff from MSIFN, Curve Lake, Hiawatha, and other First Nations regarding the DNNP, yet overlooks fundamental and specific requests for Crown and proponent accommodation that our Nation has repeatedly emphasized. We do not see this as a staff communication to the Commission that reflects the honour, integrity, good faith, and fairness that is required by the Government of Canada.

In your response, you state "*CNSC staff and OPG were directed by the Commission on the final day of the DNNP hearing (January 25th) by the Commission to provide additional information regarding engagement activities leading up to the January Commission hearing that covered the time period from when CNSC staff submitted the Commission Member Document for the DNNP hearing (September 2013) up until the hearing in January 2024."*

The January 2024 hearing was not the first instance in which these requests have been brought to the attention of the CNSC and OPG. The timeline from September 2013 to January 2024 includes numerous occasions where MSIFN raised the subject concerns. The said concerns and requests outlined were initially raised by MSIFN as early as October, 2022, and were subsequently reiterated in multiple intervenor submissions leading up to the DNNP hearing.

Your response also states that *"The scope of the request did not include reiterating or summarizing the requests and submissions from any interveners including MSIFN as that information was already provided on the record to the Commission"*.

While this is accurate, it's important to reiterate that these requests have been raised on multiple occasions outside of intervenor submissions. They have been directly communicated to OPG and the CNSC in various meetings and comments, independent of regulatory hearings. Additionally, OPG and MSIFN are engaged in preliminary discussions regarding some of the requested items (i.e. offsite restoration). It is perplexing to us why this information would not be included in the summary of the consultation record presented to the Commissioners.

We wish to continue a positive note, but these omissions have been taken as lack of transparency, creating an imbalanced record of engagement, requiring the Nations to now allocate time to rectify the matters rather than collaborate on a submission together.

We acknowledge the tight timeline associated with the Commission's request. However, considering the initial hearing date of January 23rd and the CNSC's staff update submission

date of February 2nd, there was still time for MSIFN to conduct an expedited review of the staff update before submission. It is crucial that the record reflects the information accurately.

MSIFN continues to request that CNSC staff, now and continually, alert Commissioners of the following unresolved issues:

1. The CNSC require OPG to obtain consent from MSIFN and other WTFN for the Project prior to issuing a license to construct.
2. The CNSC require OPG to complete a gap analysis between the JRP EA and the current federal IAA requirements.
3. The CNSC and OPG provide MSIFN with greater clarity and a plan for nuclear waste.
4. The CNSC mandate a follow-up program (in line with the current IAA framework) to be completed by OPG in collaboration with interested WTFNs.
5. The CNSC and OPG Commit to Meeting with Leadership to Review International Best Practices for the management and storage of used nuclear fuel at reactor sites with current practices at the Darlington site.
6. OPG establish a restoration fund that would facilitate projects on lands within and outside of OPG Darlington's site control, in collaboration with First Nations, and other governments.

The above requests are provided in addition to the requests and required accommodations presented by MSIFN, Curve Lake, and Hiawatha First Nations at the January 2024 public hearing.

The CNSC, as the Crown regulator, has the obligation to consult with and accommodate MSIFN. These issues must be addressed before a license to construct is granted.

Miigwech,

X_____

Chief Kelly LaRocca
Mississaugas of Scugog Island First Nation

From:	DeCoste, Laura
To:	drichardson@scugogfirstnation.com; sshrubsole@scugogfirstnation.com; Rob Lukacs;
Cc:	McCavitt, Keely
Subject:	For MSIFN review - Initial Draft of DNNP Licence to Construct Rights Impact Assessment
Sent:	2024-04-09 3:37:00 PM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi everyone!

As discussed at today's monthly meeting, please find attached a first version of the DNNP Licence to Construct RIA for MSIFN's review. This version of the RIA includes Chapters 1 through 4.1, but does not have the severity or conclusions chapters drafted yet, to ensure the potentially impacted rights, pathways of impacts, MSIFN's views and mitigation measures proposed to date are accurately reflected first. CNSC staff welcome any additional information, edits or feedback on this first draft of the RIA. If possible, CNSC staff are requesting initial feedback on these chapters by **May 3 2024**. Please let me know if this is enough time to have MSIFN's legal team review these chapters, as discussed today, or if MSIFN will require additional time.

Once MSIFN has completed their review and provided initial feedback to the CNSC, CNSC staff will work to address the feedback and begin drafting the severity section of the Report (including the summary table). CNSC staff are open to one-on-one meetings with MSIFN to discuss the RIA at any point during your review or while drafting the severity information. CNSC staff also recommend having a triparty meeting between MSIFN, CNSC and OPG to discuss the potential impacts on rights raised to date, the proposed mitigation measures and any outstanding concerns / residual impacts that MSIFN feels have not been adequately mitigated. The draft issues tracking table and any additional concerns included there, could also be discussed at this meeting.

If schedules and reviews continue as expected, CNSC staff recommend having this meeting in Mid-May to early June. However, we can be flexible with the timing! If this is agreeable to MSIFN, please let me know and I can look to find at date that works with MSIFN, CNSC staff and OPG.

As previously discussed, in order to increase the amount of time for collaboration on the RIA, CNSC staff are planning on including the report in the supplemental submission tentatively scheduled to be submitted to the Commission in September 2024, in advance of the Commission hearing which is tentatively scheduled for early October 2024. Note that these timelines and next steps are dependant on Commission's decision regarding the applicability of the EA.

Thank you,
Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division

Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Intérimaire Agente principale des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	Consultation
To:	DeCoste, Laura
Cc:	Don Richardson; Sam Shrubsole; Rob Lukacs;
Subject:	Re: For MSIFN Review - Overview of DNNP specific consultation and engagement with MSIFN and proposed tentative timelines and next steps for DNNP
Attachments:	2024-4-18 - DNNP Consultation Report - CNSC - MSIFN_[FINAL].pdf
Sent:	2024-04-18 3:46:26 PM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Laura,

Please see attached MSIFN's comments on the DNNP Specific Consultation and Engagement Report.

Miigwech,

Rob Lukacs
Consultation Advisor to MSIFN

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Date: Wednesday, March 27, 2024 at 2:50 PM
To: Don Richardson <drichardson@scugogfirstnation.com>, Samantha Shrubsole <sshrubsole@scugogfirstnation.com>, Rob Lukacs <rlukacs@scugogfirstnation.com>, Consultation <consultation@scugogfirstnation.com>
Subject: For MSIFN Review - Overview of DNNP specific consultation and engagement with MSIFN and proposed tentative timelines and next steps for DNNP

Hi all!

The purpose of this email is to request MSIFN's review of CNSC documentation and provide information about proposed next steps and timelines for the DNNP Licence to Construct (LtC) application. Please note that all the information included in this email regarding the approach, next steps and timelines are dependent on the Commission's decision on the January 2024 DNNP hearing on the applicability of the EA to OPG's selected technology and are subject to change based on what the Commission decides. The proposed timelines and next steps are CNSC staff's recommendations, but we would be happy to set up a meeting in the next few weeks to go over all this information and hear your views on the proposed next steps. Please let me know if this is of interest to you and I can share some dates that work on our end.

Request for review of consultation and engagement overview:
As discussed at recent meetings with MSIFN, please find attached a draft overview the consultation activities with MSIFN specific to the DNNP. This information will be included in CNSC staff's submissions to the Commission for the DNNP Licence to Construct application, should the project proceed. At this time, we are requesting that MSIFN:

- Review the attached document to confirm whether it accurately reflects the consultation and engagement with your Nation to date in relation to the DNNP LtC and the key concerns raised by MSIFN. Please provide any comments or edits in the document, using tracked changes. This information will be included in the Consultation Report for the DNNP Licence to Construct application.
- Review the issues tracking table shared with MSIFN on February 29, 2024. A version of the table will be included as an appendix to the report.
- Provide any feedback on OPG's and CNSC's engagement and consultation to date with regards to the DNNP LtC, to be considered in the CNSC's assessment and included in the report.

If possible, please provide any feedback by April 18, 2024.

Approach to reporting on Indigenous Consultation and engagement for the DNNP LtC:
In the past, CNSC staff content and recommendations with regards to Indigenous Consultation and Engagement has been included in a section of staff's Commission Member Document (CMD) for a licensing application. However, due to the amount and complexity of the information, collaborative nature of the development of the content and importance of this topic, in relation to the DNNP Licence to Construct hearing, CNSC staff are taking the approach of having a separate Consultation Report for the DNNP Licence to Construct application. The Consultation Report along with the CMD, where the report will be referenced, will form part of the CNSC's submissions and recommendations to the Commission. This report will be included as a supporting document for the Commission hearing and a summary of this report will be included in the CMD. Key correspondence (i.e notifications, updates, letters with each Nation) will be included in an Appendix of the Consultation Report. At this time, both the CNSC staff Consultation Report and CNSC staff's CMD are tentatively scheduled to be posted publicly on June 18th, 2024. Please let me know if you have any concerns or questions with this new reporting approach.

Proposed timelines and next steps for DNNP consultation activities:
In order to increase the amount of time for collaboration on the RIA, CNSC staff are not planning to include the RIA the Consultation Report tentatively scheduled to be posted in June. Instead, CNSC staff are planning to include this information in a supplemental report, tentatively scheduled to be submitted to the Commission in September 2024, in advance of the Commission hearing which is tentatively scheduled for early October 2024. The goal of this approach is to provide additional time for MSIFN and CNSC staff to work collaboratively on the RIA and on addressing the issues and concerns raised to date before finalizing these reports and documents and submitting them to the Commission to be considered as part of the record for the hearing.

Based on this, the proposed next steps and timing for the RIA and issues trackers are included in the table below. Please note that there is flexibility on the review processes and CNSC staff want to ensure that MSIFN's internal review process is considered and reflected as well. CNSC staff welcome any feedback or discussion on this topic.

Product	Tentative Timing	Activity
RIA	April 12 – May 3	CNSC to share initial draft of RIA by April 12, up to and including the mitigations chapter (severity and conclusions will not be drafted yet, to ensure CNSC have accurate understanding of rights and potential impacts first). Recommend MSIFN conducts review at the working level and shares initial feedback with the CNSC by May 3
Issues tracking tables	Early April	MSIFN to provide initial feedback on the issues tracking tables previously shared. CNSC staff to make updates based on feedback and add in the CNSC's views on the current status of the issues and concerns
Issues tracking tables	April 25 – May 9	CSNC staff to share issues tracking tables with updates made and CNSC's views on the status. MSIFN to review to confirm whether comments have been adequately addressed and include MSIFN's view on the status of the issue
RIA	May 9 to May 30	CNSC to incorporate feedback from MSIFN, draft severity and conclusions chapters and share for review by May 9. Recommend MSIFN conducts review at the working level and share initial feedback with the CNSC by May 30. CNSC staff to incorporate feedback, conduct internal reviews and discuss RIA with MSIFN in June.
RIA	Mid July to Mid August	CNSC to share full RIA with MSIFN. CNSC staff recommend MSIFN to get leadership and any legal review completed.
Issues tracking tables	Mid July to Mid August	CNSC staff to share updated version of issues tracking table, with any new issues raised and status of issues included. MSIFN to review table and include their views on the status of the issues
Update on consultation and engagement report	August	CNSC staff to provide an updated summary of the consultation and engagement conducted for MSIFN to review.
RIA	Mid August to early September	CNSC to make updates based on MSIFN leadership review. Discussions had as needed.
All products	September 4	RIA, issues tracker and update on consultation due – must be finalized and submitted to CNSC staff.

Please let us know if you have any questions or concerns about this approach and process and we would be happy to discuss further, thank you!

Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

From:	DeCoste, Laura
To:	sshrubsole@scugogfirstnation.com; Consultation;
Cc:	Rob Lukacs; Don Richardson; Levine, Adam; McCavitt, Keely;
Subject:	RE: For MSIFN Review: Draft DNNP issues tracker
Sent:	2024-04-23 8:56:00 AM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Good morning Sam!

Please find attached CNSC staff's responses to the technical concerns that MSIFN had indicated were outstanding and/ or had not been responded to by either CNSC or OPG.

As mentioned below, please let us know if there are any topics that MSIFN would like to have focused meetings on. CNSC staff remain committed to discussing these concerns further and working to address the outstanding concerns to the extent possible. We are also working on updating the issues tracking table. OPG has requested additional time for their input, so it is likely that we will send an updated table for MSIFN to validate for accuracy in early May.

Let us know if you have any questions.

Thank you,

Laura DeCoste
[she, her, elle]

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Intérimaire Agente principale des politiques, Division des relations avec les Autochtones et les parties intéressées
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From: Sam Shrubsole <sshrubsole@scugogfirstnation.ca>
Sent: Tuesday, April 2, 2024 4:28 PM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>; McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>; Rob Lukacs <rlukacs@scugogfirstnation.ca>; Don Richardson <drichardson@scugogfirstnation.ca>
Cc: Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; Dormer, Natalie <natalie.dormer@cnsc-ccsn.gc.ca>; consultation@scugogfirstnation.com
Subject: Re: For MSIFN Review: Draft DNNP issues tracker

Hi Laura,

Thanks for your reply, I hope you had a nice long weekend as well.

MSIFN would prefer to receive a written response from CNSC staff first, followed by meetings if necessary regarding outstanding concerns.

We look forward to seeing the updated issues tracking table later this month.

Thank you,
Sam

Samantha Shrubsole
Consultation Advisor to MSIFN

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Tuesday, April 2, 2024 7:48 AM
To: Sam Shrubsole <sshrubsole@scugogfirstnation.ca>; McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>; Rob Lukacs <rlukacs@scugogfirstnation.ca>; Don Richardson <drichardson@scugogfirstnation.ca>
Cc: Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; Dormer, Natalie <natalie.dormer@cnsc-ccsn.gc.ca>; consultation@scugogfirstnation.com <consultation@scugogfirstnation.com>
Subject: RE: For MSIFN Review: Draft DNNP issues tracker

Good morning,

I hope everyone had a good long weekend! Thank you for providing the feedback on the issues tracking table – we will work to update the table based on MSIFN's feedback as well as get responses to the comments and concerns MSIFN has indicated are outstanding. Please let me know whether MSIFN would like to set up focused discussions on any of the concerns flagged as outstanding or if MSIFN's preference is to receive a written response first?

We will aim to share an updated issues tracking table with MSIFN by the end of April.

Thank you!

Laura DeCoste

[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division

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From: Sam Shrubsole <sshrubsole@scugogfirstnation.ca>
Sent: Thursday, March 28, 2024 1:42 PM
To: McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>; Rob Lukacs <rlukacs@scugogfirstnation.ca>; Don Richardson <drichardson@scugogfirstnation.ca>
Cc: Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>; Dormer, Natalie <natalie.dormer@cnsc-ccsn.gc.ca>; consultation@scugogfirstnation.com
Subject: Re: For MSIFN Review: Draft DNNP issues tracker

Hi Keely,

Thank you for the opportunity to review and provide feedback on this DNNP issues tracking table.

Please see MSIFN's comments attached. Comments are in the "MSIFN Response" column in red.

Looking forward to further discussions on these.

Have a good long weekend!

Sam

Samantha Shrubsole

Consultation Advisor to MSIFN

From: McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>
Sent: Thursday, February 29, 2024 11:45 AM
To: Samantha Shrubsole <sshrubsole@scugogfirstnation.com>; Rob Lukacs <rlukacs@scugogfirstnation.com>; Don Richardson <drichardson@scugogfirstnation.com>
Cc: Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>; Dormer, Natalie <natalie.dormer@cnsc-ccsn.gc.ca>
Subject: For MSIFN Review: Draft DNNP issues tracker

Hello,

I hope you are having a good day so far!

Attached you will find MSIFN-specific DNNP issues tracking table for your review (the initial RIA draft to follow).

Draft Issues tracking tables:

- CNSC staff have created the attached MSIFN specific DNNP issues tracking table. The goal of the table is to include the key issues and concerns MSIFN has raised to date related to the DNNP and information about how the CNSC and OPG have responded to the concerns. The issues tracking tables will be included as an annex to the Commission Member Document (CMD) for the Licence to Construct application, should the project proceed
- We are requesting MSIFN review the table to confirm whether it captures all the key issues, concerns and comments raised by MSIFN specific to the DNNP. The information included in the "OPG's Responses" column is based off of information included in OPG's documentation and/or that they have said on the record. Please let us know your views on if this information is accurate, based on your understanding.
- After this initial review, we will update the table as additional concerns are raised. Then, likely in April, we can confirm the status of the issues – this will include indicating whether the CNSC and the MSIFN are in agreement and if not, it will include both the CNSCs and MSIFN's views. Note that these timelines and next steps are tentative and are dependent on the Commission decision on the first hearing.

If possible, I am hoping that MSIFN are able to complete their review and provide feedback on these documents by March 29th. Additionally, CNSC staff will be aiming to share a draft of the Indigenous Consultation and Engagement section of the Licence to Construct CMD in late March for MSIFN's review. Note that these timelines are tentative and are dependent on the Commission decision on the first hearing.

Please let us know if you have any questions or concerns!

Thank you

Keely

Keely McCavitt

she, her, elle

Policy Officer, Indigenous and Stakeholder Relations Division

Canadian Nuclear Safety Commission

keely.mccavitt@cnsc-ccsn.gc.ca | Cell :613-4625-090

Agent(e) des politiques, Division des relations avec les Autochtones et les parties intéressées

Commission canadienne de sûreté nucléaire

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I acknowledge that the land on which I live and work is the traditional unceded territory of the Algonquin Anishnaabeg people.

Je reconnais que la terre sur laquelle je vis et travaille est le territoire traditionnel non cédé du peuple algonquin Anichinabé.

#	MSIFN Question or Concern	CNSC staff response
1	MSIFN disagrees that there will be no significant residual adverse environmental effects from the deployment of up to four BWRX-300 reactors. The mitigation measures suggested thus far do not outweigh the negative environmental impacts of the project, and OPG is not willing to commit to protecting SAR habitat on the site long-term. Further, this conclusion is not reasonable given the lack of decommissioning plan We do not have the information needed to conclude that the DNNP will not lead to residual adverse impacts on the environment. As stated, OPG's plans are currently not finished for things such as SAR beneficial actions, fish impacts and offsetting, and decommissioning plans for the site. MSIFN and the CNSC must understand the proposed mitigation measures fully before the license to construct hearing.	CNSC staff understand that MSIFN is seeking additional information regarding the conclusions of the environmental assessment for the DNNP. CNSC remain open to working with MSIFN to understand their concerns, respond to their questions and work to address the concerns to the extent possible. CNSC also expect that OPG work with the Williams Treaties First Nations to address the concerns. An environmental assessment (EA) has been conducted for the proposed DNNP. The purpose of the EA was to assess potential impacts of the project and identify measures to help mitigate these impacts. Each potential impact and the related mitigation measures were evaluated by CNSC staff, along with other Responsible Authorities (RAs) for this project, including Fisheries and Ocean's Canada (DFO) and Transport Canada (TC), in consultation with Indigenous Nations and members of the public. These are documented in the Environmental Impact Statement (EIS) and Joint Review Panel (JRP) Report. Based on the evaluation of the site documented in the EIS and its supporting documentation, as well as the documentation and interventions heard during the JRP Public Hearings, the JRP concluded that the DNNP would not result in significant residual adverse effects, provided that the mitigation measures and JRP Recommendations were implemented. These recommendations were accepted by the Government of Canada, and OPG has been conducting ongoing assessments, evaluations and monitoring throughout the site preparation licensing period that followed. In 2021, once a reactor technology was selected, OPG was required to review the EIS against the reactor parameters, and any other updated site characteristics. OPG submitted the *EIS Review Report* as part of the LTC application in 2022. This *Review Report* did not alter the mitigation measures presented in the EA; it evaluated whether the previously accepted measures remained effective to mitigate any potential effects of the chosen reactor. The *EIS Review Report* found that the mitigation measures remained sufficient to mitigate potential environmental impacts from the deployment of up to 4 BWRX-300s, with one exception related to species at risk (SAR). Since the EA studies were conducted, 8 bat species have been identified at the DNNP site, 3 of which are now species at risk, subject to regulation under Ontario's *Endangered Species Act.* One potential effect from project construction and operation was found to be potentially harmful to bats: site illumination. An additional mitigation measure was proposed to minimise the harmful effects of vibrant site lighting on bat habitats. In order to pursue licensed activities, OPG was required to present sufficient evidence it has considered and implemented measures to mitigate potential harms to species at risk (SAR) species, as required either by the federal *Species at Risk Act* or Ontario's legislation. OPG submitted this documentation to both the Ontario Ministry of Environment, Conservation, and Parks (MECP) and CNSC, and MECP issued a permit under the Ontario ESA to conduct vegetation removal. CNSC subsequently authorised gradual commencement of site preparation works in 2022 and 2023. • OPG has several commitments to provide federal and provincial departments—that is, DFO, Environment and Climate Change Canada (ECCC), and MECP, as required—with studies and documentation that it has implemented required measures to mitigate impacts on SAR species, prior to commencing any work that would affect those species or their habitats. To date, OPG has not conducted work in the Lake nor at the Bluffs that would cause harmful effects to the species that reside in those environments, and these commitments remain outstanding. DNNP Commitments D-P-12.3, D-P-12.4, D-P-14, and D-P-16 consequently remain open:D-P-12.3 *Methodology Report for EMEAF for: Surface Water Environment* (commitment with CNSC, as well as ECCC) • D-P-12.4 *Methodology Report for EMEAF for: Aquatic Environment* (Commitment with CNSC, as well as DFO) • D-P-14 *Fish Habitat Compensation Plan* (commitment with DFO) • D-P-16 *Lake Infill Design* (commitment with CNSC, DFO, Transport Canada, and Ontario Ministry of Natural Resources) These commitments will be closed after satisfactory review by CNSC and other governmental departments, and only after the submissions meet the criteria in the *DNNP Commitments List* (Rev. 09, available upon request). CNSC staff remain open to working collaboratively with MSIFN to discuss ongoing concerns with respect to SAR, decommissioning and mitigation measures. CNSC staff are also aware that OPG has been engaging MSIFN and other interested Williams Treaties First Nations on the various Federal and Provincial permits required for the DNNP. CNSC staff encourage OPG to continue to engage on the permits of interest to MSIFN.

2	MSIFN raised concern regarding impacts to water from usage as coolant and moderator in SMRs.	CNSC staff note that that it will not be lake water that is used to cool the fuel or provide neutron moderation for the BWRX-300. Demineralised water, either produced on-site in a dedicated Water Treatment Plant, or shipped in from an off-site treatment plant will be used as coolant/moderator. Untreated water has too many impurities that render it conductive, corrosive, or susceptible to other deleterious effects on the reactor and its systems (such as increased rates of radiation-induced dissociation of water molecules into free hydrogen and oxygen gases, for example). The overriding objective of the reactor coolant pressure boundary is to contain the coolant (and maintain the pressure boundary), but in so doing, to maintain the required inventory through constant heating/condensation cycles as the water passes through the reactor and the turbines. Inventory is added from dedicated storage tanks to cover losses due to evaporation. This water is not discharged to any receiving body during normal operations—it is intended to be continually recirculated.
3	MSIFN raised concern regarding environmental effects of intake and discharge structures offshore, and mitigations remain outstanding and have not been addressed. MSIFN requested more information about the construction of the intake and discharge structures offshore, including their size and location in Lake Ontario as well as anticipated environmental effects/mitigations.	CNSC staff note that OPG has yet to submit the final design of the intake and diffuser to the CNSC for review. CNSC staff currently expect OPG to submit this information in early summer 2024. However, to aid in siting of the intake and diffuser of DNNP, OPG conducted aquatic characterization studies in 2018 and 2019. Results of the characterization studies indicated high variability throughout the study area, it was determined there was no particular advantage to siting the intake and diffuser deeper than 15m or between gravel or sand substrate. The aquatic characterization indicated ideal siting for the intake and diffuser was >10m and <15m to avoid placement within the preferred spawning locations of round whitefish (<10m) and deeper benthic species (deepwater sculpin) to minimize impact on their preferred habitat. CNSC staff note that the detailed design of the Condenser Cooling Water (CCW) system, part of the cooling methodology known as *once-through lake water cooling*, is still under development by OPG, and is subject to further evolution and refinement. CNSC staff understand OPG is working with Williams Treaties First Nations in the design of the CCW system, in an effort to understand the Nations' concerns and implement effective mitigation measures. We expect the completed CCW design package in Q2 of 2024 (currently estimated sometime in the summer). In a once-through cooling system, the CCW system is a supporting system to the Main Condenser of any nuclear reactor (including SMRs, if chosen). The function of the Main Condenser is to condense waste steam from the low-pressure steam turbines (at this point, this is now called condensate) and recirculate that condensate back to the Steam Generators (in a CANDU or traditional PWR), or directly to the Reactor Pressure Vessel (in the case of a BWR). The CCW is a separate system consisting of piping and associated pumps and valves that penetrate the condenser, through which cooling water flows, **but does not contact the condensed steam/condensate**. Steam exhausted from the turbine is in contact with the outer portion of these CCW pipes, and it is this temperature/pressure difference that allows condensation to occur. Water flows through these CCW pipes at a higher pressure than the vacuum of the Main Condenser and consequently condenses the steam, but at no point is this cooling water in contact with the steam/condensate. The water supplying the CCW is minimally-treated with biocide prior to circulating through the piping, removing any remaining heat/energy from the steam and condensing it, before ultimately recirculating back to the receiving body. In the case of the DNNP, water from Lake Ontario will be pumped from the intake structure to a receiving "forebay," and from there, pumped through the CCW piping in the "service side" of the BWRX-300 Main Condenser, and returned to the lake through the outlet. OPG states in their EIS Review Report that the maximum flow rate to supply adequate cooling to the Main Condenser of up to 4 BWRX-300 units is approximately 68 cubic metres per second—far less than the bounding scenario of up to 250 m^3/s (for deployment of four traditional reactors considered in the EA). To mitigate the effects of increased thermal energy deposited into the lake, the outlet structure includes many "diffusers" intended to spread the heated water across a larger area. A turbulent mixing zone allows for further diffusion of the deposited heat. OPG is required to design the outfall to ensure that it will not discharge heated water with an average temperature, beyond this mixing zone, greater than 2 degrees Centigrade above ambient. This is to ensure protection of Round Whitefish larvae during their winter breeding periods. This requirement is documented in DNNP Commitment D-C-1.2.
4	MSIFN raised concerns regarding impacts to aquatic SAR, proposed fish protection measures, and fish habitat compensation plans remain outstanding and have not been addressed.	CNSC staff note that OPG will have to acquire a Fisheries Act Authorization from Fisheries and Ocean's Canada (DFO) before conducting any activities with the potential to harm fish and fish habitat (in water works, construction and operation of the condenser cooling water system etc.). OPG will be required to record number of fish, species, and age class of fish impinged and entrained and then propose and implement compensation measures for the fish lost. OPG will have to implement offsetting or compensation measures, commensurate with observed fish losses, and will be outlined in their authorization and approved by DFO. DFO

	MSIFN asked whether OPG will be creating any beneficial actions or offsetting as they are likely to impact two SAR species? Will DFO Authorizations be required? MSIFN requested additional information on how there is no further concern for the fish species if entrainment of Deepwater Sculpin has been identified recently on site? What does OPG mean by "fish protection measures will be taken if needed at the intake structures"? MSIFN requests that fish protection measures be taken at the intake structures regardless of prevalence of SAR or other factors.	and OPG will be required to consult with MSIFN and other Indigenous Nations and communities on the Fisheries Act Authorization. CNSC staff commit to informing DFO and OPG of MSIFN's interested to be consulted on this topic. Although entrainment of Sculpin has been identified at the existing DNGS, subsequent monitoring studies performed by OPG, and reviewed and accepted by CNSC staff, have not detected significant interactions with the DNGS intake structures (e.g., Deepwater Sculpin were not entrained at DNGS in 2004 or 2006 but were entrained in 2015/2016. Deepwater Sculpin population in Lake Ontario had been found to be recovering and densities and biomass may be similar to other Great Lakes (Weidel et al. 2017). Furthermore, the Deepwater Sculpin population in Lake Ontario may be nearing its carrying capacity (Weidel et al., 2019). This conclusion is expected to remain applicable to the intake and discharge structures for the DNNP (only one Deepwater Sculpin larva was collected in spring 2011 within the DNNP Site Study Area, and one Deepwater Sculpin larva was collected from larval tows in 2018 within the DNNP Site Study Area). OPG would be required to implement fish protection or adapt mitigation measures to continue to ensure that DNNP activities do not introduce significant environmental effects to aquatic biota. For species that are listed as Endangered or Threatened under Schedule 1 of the federal Species at Risk Act, OPG is required to obtain permits from DFO prior to commencing any work and would be required to comply with direction from those regulatory authorities. Weidel et al. 2017 – Brian C. Weidel, Maureen G. Walsh, Michael J. Connerton, Brian F. Lantry, Jana R. Lantry, Jeremy P. Holden, Michael J. Yuille, James A. Hoyle, Deepwater sculpin status and recovery in Lake Ontario, Journal of Great Lakes Research, Volume 43, Issue 5, 2017, Pages 854-862, ISSN 0380-1330, https://doi.org/10.1016/j.jglr.2016.12.011. Weidel et al., 2019 - Weidel, Brian & Connerton, Michael & Holden. (2019). Bottom trawl assessment of Lake Ontario prey fishes
5	MSIFN's view is that that the concern regarding long-term protection of SAR habitat remains outstanding and is further emphasized as OPG seeks ESA permits for SMR units 2-4. Currently, OPG does not have planned locations for beneficial action areas to compensate for SAR impacts as a result of these units, so we are unable to confirm whether appropriate compensation measures exist.	CNSC staff note that OPG has been issued a permit in March 2024 for work affecting SAR species for units 2-4. Permitting to date must: ○ create 1.99 hectares of meadow habitat providing foraging habitat for Bank Swallow and SAR Bats ○ create 2.42 hectares of treed habitat providing roosting and foraging habitat for SAR Bats ○ enhance 0.58 hectares of existing thicket habitat providing roosting and foraging habitat for SAR Bats ○ install 20 bat boxes within the treed habitat creation area, providing roosting habitat for Little Brown Myotis ○ develop and install four interpretive or educational signs at publicly accessible trails within the habitat creation and enhancement areas, that will provide information on Bank Swallow and SAR Bats ○ monitor the effectiveness of the meadow habitat for a period of five years ○ monitor the effectiveness of the treed habitat creation and enhancement areas and bat boxes for a period of ten years CNSC staff's review determined that the impact to SARA species would be less than or equal to that than was accepted in the EA due to the mitigation measures proposed by OPG, see appendix table below "**Proposed Terrestrial Mitigation Measures for DNNP"**. Health of SAR species is assessed throughout the lifecycle of the facility through the cyclical nature of environmental risk assessments, which assess the potential health impacts to species around the facility by modelling impacts of contaminants of potential concerns alongside any physical effects (such as noise). CNSC staff work with partners in ECCC/MECP to review these plans, but species at risk permitting is ultimately the jurisdiction of the Province, given the project is occurring on provincial lands. CNSC staff encourage OPG to continue to discuss MSIFN's request for off-site restoration and work to address MSIFN's concerns regarding long-term protection of SAR.

6	MSIFN raised concern regarding Habitat fragmentation and the East-West wildlife corridor. It is unreasonable to conclude that because the east-west wildlife corridor has survived past fragmentation that wildlife will still be present during/after DNNP project construction. Cumulative effects of multiple activities on site over a long period of time could permanently impact the corridor disrupting connectivity and the surrounding ecosystem.	CNSC staff note the interruption of wildlife travel along the east-west corridor across the Darlington Nuclear site was considered an adverse effect of the DNNP, and the EA identified incorporating, to the extent practicable, design measures to maintain access for wildlife travel on the east-west wildlife corridor during construction activities, and to enhance the function of the corridor for the long term as a mitigation measure. OPG has conducted annual biodiversity monitoring on the Darlington Nuclear site, including monitoring of wildlife traffic along the east-west corridor, and has noted the presence of wildlife despite roads and other major disturbances on the site. The mitigation measures identified in the EA would continue to address adverse effects on landscape connectivity and would apply to the deployment of the BWRX-300 reactors. CNSC staff note that OPG's proposed mitigation includes incorporating to the extent practicable in the DNNP design, measures to maintain access for wildlife travel on the east-west wildlife corridor during construction activities; and to enhance the corridor function for the long-term.
7	MSIFN indicated that they have outstanding concerns regarding: - Decommissioning and end-of-life plans for DNNP site, including other OPG uses - increased volume of solid waste generated, with no long-term plan for safe management and storage - the Preliminary Decommissioning Plan MSIFN understand that issues relating to radioactive materials will be assessed as part of a future license to operate application, and not during the license to construct. However, MSIFN remains concerned regarding the lack of long-term planning for waste management and storage from the project. We know that the volumetric inventory of solid radioactive wastes, and the predicted airborne emissions, are slightly higher than the values reported in the EA. OPG and the CNSC must use this information to plan for the used nuclear fuel and emissions prior to granting a license to operate. MSIFN is interested in collaborating on the PDP and staying informed about plans and strategies for decommissioning the DNNP at each licensing stage. It is disappointing that OPG has not created a decommissioning plan or even a preliminary strategy for the BWRXT reactors/DNNP site.	To date, OPG has provided three decommissioning plans for the site of the DNNP. The first was submitted in support of the Licence to Prepare Site, which was renewed in October 2021. In support of its submission for a Licence to Construct, OPG provided CNSC staff with two Preliminary Decommissioning Plans (PDP). The first PDP was submitted to satisfy the requirements for REGDOC-1.1.2, *Licence Application Guide: Licence to Construct a Reactor Facility, Version 2*. REGDOC-1.1.2 states in section 4.5.16: *At construction, the applicant shall consider 2 areas of decommissioning:* • *construction from a decommissioning perspective* • *activities encompassed by the licence to construct: a preliminary decommissioning plan and financial guarantee that covers the scope of work and related costs to return the site from the conditions expected at the end of a licence to construct to an agreed-upon end state (including, if the project is halted, restoration of the site to the original condition)* *The preliminary decommissioning plan shall be in accordance with REGDOC-2.11.2, Decommissioning.* Additionally, section 4.5.3 states: *The application shall describe considerations and design provisions that will facilitate future reactor facility decommissioning and dismantling activities.* *The application should also describe considerations and provisions for storage of radioactive waste after the end of commercial operation.* To summarize, this plan must demonstrate the processes and activities necessary to return the as-constructed plant to a determined end-state that is satisfactory to the CNSC, ensuring the safety of the public, workers, and the environment. Additionally, OPG must provide a credible estimation of the costs associated with the work activities necessary to achieve the determined end-state and an accompanying financial instrument to ensure access to the funds necessary for decommissioning. In addition to the PDP for the as-constructed site, OPG provided a PDP for the end-of-life phase. The end-of-life phase PDP details the process from bringing the site from the end of operations (should the project proceed) to the agreed upon end-state. This PDP included all activities and considerations regarding the management of radioactive materials and wastes. This PDP is not a requirement for a licence to construct, and as such, the assessment of this PDP will not play a

	It is irresponsible to begin a project of this size without a decommissioning strategy, this is a requirement for most major projects on Crown land.	role in CNSC staff's assessment of the waste management SCA for licence to construct. However, should OPG request a Licence to Operate following the potential construction of the DNNP, a PDP describing the decommissioning of this phase with be a requirement. To clarify a previous statement from CNSC Staff on August 29, 2023 that "the volumetric inventory of solid radioactive wastes, …during normal operations are slightly higher than the values in the EA." The Plant Parameter Envelope (N-REP-01200-10000 Rev. 5) analysis for the BWRX-300 identified that the solid volumetric activity (Bq/m^3) would exceed the values assessed in the Environmental Assessment. This exceedance was found for some radionuclides, whereas others were below the values established for the EA. That is to say that whilst some radionuclides are higher in activity, the overall activity of all the radionuclides is still within the bounds of the EA. OPG has provided more comprehensive modeling of radionuclide production in the later revision of the Plant Parameter Envelope (N-REP-01200-10000 Rev. 6) using specific data from other Boiling Water Reactors. The revised analysis is now within PPE values for both waste activity (Bq/y) and volume (m^3/y). CNSC staff acknowledge that MSIFN remains concerned regarding the lack of long-term planning for waste management and storage from the project. CNSC staff reiterate the CNSC's commitment to consultation with MSIFN and continuing to provide information regarding waste management, as it becomes available, at each stage of the project should it proceed. CNSC staff are open and interested in collaborating with MSIFN on reviewing OPG's future revisions to the PDP. CNSC staff also encourage MSIFN to offer to work collaboratively with OPG in the development of future revisions of the PDP.
8	MSIFN indicated that the evaluation of alternative on-site locations for the used fuel dry storage facility is considered in the framework of the bounding site development, so long as OPG does not exceed its used fuel storage and processing specifications. MSIFN acknowledges that higher solid waste volumetric activity will be generated during the BWRX-300 operation. Therefore, OPG may exceed the specifications in the framework of the bounding site. Considering this, this issue should be further evaluated and mitigated through meaningful collaboration between WTFN and OPG.	For this application, CNSC has not received an application for waste management facility related to the DNNP. A DNNP Solid Radioactive Waste Management Strategy has been submitted to CNSC staff for review. The Strategy document describes some of the lifecycle considerations for waste management, including interim storage. These considerations include: • spent fuel casks will be transferred to an interim storage facility within the Darlington site. • The interim storage facility should be as close as possible to the DNNP. • The location and design of the interim storage facility depends on several considerations such as ground water table level, seismic efficiency, foundation and soil profile, security, as well as other environmental conditions. The location and design of the facility will ensure that it does not have a substantial affect on the environment, as well as ensuring that the facility is suited to withstand all conditions on site. • The facility must also be designed to ensure sub-criticality of the used fuel is maintained and that radiation shielding is provided to ensure dose limits to both the workers and the public are maintained ALARA (As Low As Reasonably Achievable). Currently, waste generated at OPG nuclear generating sites is managed at waste management facilities that are licenced under separate CNSC licences. Any changes to the licensing basis of one of those licences, for example increased capacity, would require a licence amendment that would be subject to a CNSC licensing process. CNSC staff will ensure that MSIFN is kept informed of any proposed amendments and has opportunities to meaningfully participate in the regulatory process. CNSC staff also encourage OPG to conduct early engagement and collaboration with MSIFN, and other interested WTFN's on this topic.
9	MSIFN indicated that the CNSC's response to a request for a Gap analysis and the requirements for an Environmental Assessment follow up program that follow the principles of the IAA framework has not resolved their concern.	CNSC staff note that OPG is required to implement an EA Follow-Up program, as per the *Canadian Impact Assessment Act* (CEAA) of 1992, under which the EA conclusions for the DNNP were accepted. Although this project is not subject to the *Impact assessment Act* (2019), CNSC staff are aware that OPG has committed to collaboratively, with MSIFN and other interested WTFNs, reviewing the environmental work done in 2009 and determine what needs to be updated to todays standards. OPG is committing to conduct an environmental monitoring augmentation program to apply an Indigenous knowledge lens and involve interested Williams Treaties First Nations in the on-site environmental monitoring. CNSC staff understand that OPG and the WTFNs, including MSIFN, are currently in the scoping phase of this project.

		CNSC staff note that OPG developed the initial EA Follow-Up program following the Government of Canada's EA conclusions in 2012. OPG has since revised this EA Follow-Up plan twice, and CNSC staff anticipate a subsequent revision should the Commission issue a construction licence. The requirement to implement the EA Follow-Up program required under CEAA 1992 is carried through to the proposed Licence to Construct, and documented in the proposed *Licence Conditions Handbook (LCH) for a Licence to Construct*. This LCH is currently undergoing development and will be available for MSIFN to review and comment after 18 June 2024. CNSC staff note that MSIFN will be able to comment on the LCH as part of their intervention to ensure their views are heard by the Commission. CNSC staff are open to further discussing the LCH and any questions or concerns directly with MSIFN. Additionally, there will be opportunities to update the LCH throughout the licensing phases, including based on feedback from Indigenous Nations and communities. CNSC staff will include an explicit requirement in the LCH that requires OPG to follow through with their commitments with the Nations when updating the EA Follow-Up program. As suggested in the November 20th meeting between CNSC staff and MSIFN, CNSC staff encourage MSIFN to inform OPG of their expectations for what gets included in the EA follow-up program, and flag any concerns with CNSC.

Proposed Terrestrial Mitigation Measures for DNNP

Terrestrial Environment – Vegetation Communities	• Re-planting of approximately 40 to 50 ha of Cultural Meadow and approximately 15 to 20 ha of Cultural Thicket with native shrub plantings, and Woodland dominated by Sugar Maple. • Creation of new fish-free wetland ponds with riparian plantings. • Create wetlands on lake filled area. • Development of stormwater management techniques to provide for adequate flow and water quality (e.g., TSS) to Coot's Pond. • Salvage and relocate or re-plant rare plant species in suitable existing or created habitat. • Include native forb seeds in seed mixture for Cultural Meadow re-planting. Some of these mitigation measures may not be necessary for the BWRX-300 deployment. The area required for BWRX-300 deployment is smaller in size and deployment may not require removal of on-site ponds. As a result, there is an opportunity to retain some of the on-site features, once slated for removal. This opportunity would be explored further during the finalization of the DNNP plant layout and the construction plan.
Terrestrial Environment - Insects	• Retention of onsite ponds • Dust suppression plan (see atmospheric row)
Terrestrial Environment - Birds	Breeding Birds • Dust and Noise Suppression (see atmospheric row) • Potential habitat compensation (see vegetation communities) Bird Strikes • Implementation of Good Industry Management Practice in the design and development of lighting systems and structures, including strategies to reduce the incidence of bird strikes to the extent practicable while considering the needs of navigation safety and site security; and • Implementation of Good Industry Management Practice in the initial design of security fencing systems to reduce the incidence of bird entanglement and entrapment to the extent practicable. Bank Swallow • Acquisition of lands that contain existing large Bank Swallow colonies for study and protection; • Development of artificial Bank Swallow habitat in potentially suitable locations on the DN site and the monitoring of existing colonies; • Development of artificial habitat for aerial forage species (e.g., Chimney Swift and Purple Martin) in potentially suitable locations on the DNNP site; • Development of partnerships to undertake research into the general decline of aerial foragers in Ontario; and • Integrate interpretive opportunities related to the effects of the DNNP on shoreline bluff habitat and Bank Swallows such as erecting interpretative signage and constructing observation decks.
Terrestrial Environment – Amphibians and Reptiles	The EIS determined that mitigation measures associated with the effects on Vegetation Communities were also beneficial for the Amphibians and Reptiles. No other mitigation measures were identified in the EIS. The BWRX-300 deployment will not result in the removal of the three amphibian breeding areas (onsite ponds). For the bounding scenario reactors, three amphibian breeding areas were removed and any potential for disturbance or impacts to these ponds was not addressed by the EIS.
Terrestrial Environment – Breeding Mammals	The EIS identified that mitigation measures associated with the effects on Vegetation Communities were also beneficial for the Breeding Mammals. Consequently, no other additional mitigation measures were identified in the EIS for Breeding Mammals. With the BWRX-300 deployment, there is an opportunity to retain habitat that was assessed as being removed in the EIS. Because it was anticipated that all habitat within the construction areas would be removed, the potential for disturbance or effects to these mammals and their habitats from dust and noise during the site preparation, construction and/or operation phases of the BWRX-300 deployment was not addressed by the EIS

Terrestrial Environment - Bats	• Avoiding lighting on key habitat and features;
	• Implementing dark buffer zones, illuminance limits and zonation around key habitat and features;
	• Incorporating lighting source specifications that are less impactful to bats. Examples include:
	  ○ no ultra-violet or florescent sources;
	  ○ reduced blue light components;
	  ○ peak wavelengths higher than 550nm;

	○ low-level downward directional lighting; ○ Consideration for mounting height and horizontal orientations ○ Use of baffles, hood or louvres to reduce light spill; • Use of landscape screening; and • Strategic dimming and part-night lighting. • Implementation of Good Industry Management Practice in the design and development of lighting systems and structures, including strategies to reduce the impact of lighting on bat species to the extent practicable while considering the needs of navigation safety and site security. • Habitat compensation measures under the provincial ESA permit

From:	Consultation
To:	DeCoste, Laura; Sam Shrubsole; Rob Lukacs; Don Richardson; Kayla Ponce de Leon;
Cc:	McCavitt, Keely
Subject:	Re: For MSIFN review - draft issues tracking table for the DNNP
Attachments:	2024-06-10_CNSC-AppendixB_DNNP_v4.docx
Sent:	2024-06-10 6:08:07 PM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Laura,

Please find attached our responses to the CNSC's revisions to the draft issues tracking table. We would like to keep the "MSIFN response" column, as it reflects MSIFN's current views on each concern.

Thanks for the opportunity to provide MSIFN's feedback.

Sam

Consultation Office
Mississaugas of Scugog Island First Nation (MSIFN)

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: May 23, 2024 9:01 AM
To: Sam Shrubsole <sshrubsole@scugogfirstnation.ca>; Consultation <consultation@scugogfirstnation.com>; Rob Lukacs <rlukacs@scugogfirstnation.ca>; Don Richardson <drichardson@scugogfirstnation.ca>; Kayla Ponce de Leon <kponcedeleon@scugogfirstnation.ca>
Cc: McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>
Subject: For MSIFN review - draft issues tracking table for the DNNP

Hello!

Please find attached the draft issues tracking table for MSIFN review. As mentioned, we will need any final feedback on the table by June 10th. Please let me know if there is anything we can do to support your review with these tight timelines (for example, if it would be helpful we could have a meeting to walk through the updates and MSIFN could provide feedback verbally).

In order to support your review, please note that:

- Updates have been made based on MSIFN's feedback, internal reviews and OPG's input (in the proponent response column)

- Status of the issues and next steps have also been added. We have worked to reflect our understanding of MSIFN's position of the status of the issue in this column, but please update as appropriate. Note that the issues tracking table will be updated and included in our supplemental submission in advance of the hearing, so there will be a chance to update the responses to the issues and status as further discussion are had.
- Please confirm whether MSIFN would like us to keep the "MSIFN response column". Most of the information included in this column from MSIFN's first review has been added to the issues or status column, but if MSIFN would like to put their final response there we can keep that column as well .

Please let me know if you have any questions.

Thank you,
Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
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laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	Sam Shrubsole
To:	DeCoste, Laura; Consultation; Rob Lukacs; Kayla Ponce de Leon; Don Richardson;
Cc:	McCavitt, Keely
Subject:	Re: For MSIFN review: updated DNNP Consultation Report
Attachments:	For MSIFN review_CNSC_staff's_Indigenous_Consultation_Report_for_the_Darlington_New_Nuclear_Project_License_to_Construct_Application_v3.docx
Sent:	2024-06-17 4:20:17 PM
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Laura,

Please see attached comments and edits from MSIFN on the DNNP Consultation Report. We appreciate the time given to complete this review.

Thank you,
Sam

Samantha Shrubsole
Project Manager and Ecology Specialist
sshrubsole@scugogfirstnation.ca
samantha.shrubsole@minogi.ca
C: 289-260-9392
Minogi Corp.
Mississaugas of Scugog Island First Nation

From: Sam Shrubsole <sshrubsole@scugogfirstnation.ca>
Sent: Wednesday, June 5, 2024 1:27 PM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>; Consultation <consultation@scugogfirstnation.com>; Rob Lukacs <rlukacs@scugogfirstnation.ca>; Kayla Ponce de Leon <kponcedeleon@scugogfirstnation.ca>; Don Richardson <drichardson@scugogfirstnation.ca>
Cc: McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>
Subject: Re: For MSIFN review: updated DNNP Consultation Report

Hi Laura,

Thank you for the update. An extension until June 17th would be great.

Thanks!
Sam

Samantha Shrubsole
Project Manager and Ecology Specialist
sshrubsole@scugogfirstnation.ca
samantha.shrubsole@minogi.ca
C: 289-260-9392
Minogi Corp.
Mississaugas of Scugog Island First Nation

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Wednesday, June 5, 2024 1:00 PM
To: Sam Shrubsole <sshrubsole@scugogfirstnation.ca>; Consultation <consultation@scugogfirstnation.com>; Rob Lukacs <rlukacs@scugogfirstnation.ca>; Kayla Ponce de Leon <kponcedeleon@scugogfirstnation.ca>; Don Richardson <drichardson@scugogfirstnation.ca>
Cc: McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>
Subject: FW: For MSIFN review: updated DNNP Consultation Report

Hi all!

I just wanted to let you know that our deadline for posting the DNNP CMD and Consultation Report has been pushed back a bit until the end of June. If MSIFN needs additional time to review the Consultation Report and issues tracking table, we can extend the deadline to June 17th.

Also, I'm hoping to be able to provide details regarding the DNNP licence to construct hearing process shortly.

Thank you,

Laura DeCoste
[she, her, elle]

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From: DeCoste, Laura
Sent: Thursday, May 23, 2024 8:15 AM
To: Sam Shrubsole <sshrubsole@scugogfirstnation.ca>; consultation@scugogfirstnation.com; Rob Lukacs <rlukacs@scugogfirstnation.ca>; Kayla Ponce de Leon <kponcedeleon@scugogfirstnation.ca>; Don Richardson <drichardson@scugogfirstnation.ca>
Cc: McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>
Subject: RE: For MSIFN review: updated DNNP Consultation Report

Good morning Sam!

Thank you for the response. I want to acknowledge that that the timelines are tight for this second review and apologize for the inconvenience it causes.

CNSC staff need to have the report finalized by June 14th and we will need a bit of time on our end to incorporate any final feedback from MSIFN. We can extend the deadline slightly to June 10th but won't have much wiggle room after that.

Note that I will be sending MSIFN the second version of the issues tracking table in a few hours, unfortunately we will be looking at the same timeframe for that document.

Thank you,
Laura DeCoste
[she, her, elle]

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From: Sam Shrubsole <sshrubsole@scugogfirstnation.ca>
Sent: Wednesday, May 22, 2024 3:43 PM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>; consultation@scugogfirstnation.com; Rob Lukacs <rlukacs@scugogfirstnation.ca>; Kayla Ponce de Leon <kponcedeleon@scugogfirstnation.ca>; Don Richardson <drichardson@scugogfirstnation.ca>
Cc: McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>
Subject: Re: For MSIFN review: updated DNNP Consultation Report

EXTERNAL EMAIL – USE CAUTION / COURRIEL EXTERNE – FAITES PREUVE DE PRUDENCE

Hi Laura,

We will review the updated DNNP consultation report and aim to provide feedback by June 4th. However, the proposed timeline only allows MSIFN 10 working days to review the updates. If we need more time, I will let you know.

Thank you,
Sam

Samantha Shrubsole
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C: 289-260-9392
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Mississaugas of Scugog Island First Nation

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Tuesday, May 21, 2024 3:15 PM
To: sshrubsole@scugogfirstnation.com <sshrubsole@scugogfirstnation.com>; Don Richardson <drichardson@scugogfirstnation.ca>; Consultation <consultation@scugogfirstnation.com>; Rob Lukacs <rlukacs@scugogfirstnation.ca>; Kayla Ponce de Leon <kponcedeleon@scugogfirstnation.ca>
Cc: McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>
Subject: For MSIFN review: updated DNNP Consultation Report

Hi all!

Please find attached the updated DNNP consultation report for MSIFN's review. Please provide any edits or feedback by June 4, 2024.

In order to support your review, please note that:

- We have used tracked changes and comment bubbles to demonstrate how MSIFN's feedback shared on April 18th has been incorporated. Please let us know if there are any concerns with how the CNSC has incorporated MSIFN's comments.
- Additional edits have been made to the text based on CNSC internal reviews, these edits are also in tracked changes.
- As mentioned at the April 9 MSIFN/CNSC meeting, we have included new sections (marked with comment bubbles) of the DNNP Consultation Report for MSIFN's review. Section 1.1, 1.2 and 1.3 are being shared with MSIFN more for your awareness and to support any feedback or views on the CNSC's approach to consultation to date (as described in the bullet below)
- We've included information MSIFN has shared regarding the request for consent and their concerns regarding the RIA consultation process in Section1.4.1– please feel free to make edits or adjust to ensure it accurately reflects MSIFN's views. Additionally, if MSIFN has any additional feedback or views on the CNSC's approach to consultation or OPGs engagement that you would like include in this report, we will include that as well. There will be an opportunity to include this feedback in the supplemental submission before the hearing. CNSC staff will be including our recommendations regarding consultation efforts and OPG's engagement in the supplemental submission and any information received from MSIFN will be considered in our assessment and reflected in report.

I am hoping to send you the updated issues tracking table in the next few days as well. Please let us know if you have any questions or want to discuss this further.

Thank you,

Laura DeCoste
[she, her, elle]

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B.3 Correspondence with Curve Lake First Nation

From:	DeCoste, Laura
To:	Cassandre Roy drainville
Cc:	francis@francischua.com; relationships@4directionsconservation.com;
Subject:	RE: Request for any feedback on OPG's and/ or the CNSC's consultation and engagement related to the DNNP
Sent:	2023-07-18 8:26:00 AM

Hi Cassandre!

Thank you for providing this and the comments on the updates to Regdoc 3.2.2. Much appreciated!

Laura

From: Cassandre Roy drainville <cassandreroydrainville@gmail.com>
Sent: July 14, 2023 3:31 PM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Cc: francis@francischua.com; relationships@4directionsconservation.com
Subject: Re: Request for any feedback on OPG's and/ or the CNSC's consultation and engagement related to the DNNP

Hi Laura,

Here's the text for DNNP CMD about engagement conducted by OPG with Curve Lake and Hiawatha on the Project.

Please let us know if you have any changes to make to the text.

Cassandre

Le jeu. 29 juin 2023, à 14 h 37, DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca> a écrit :

> Hi everyone!
>
> The CNSC is currently working on the Commission Member Document (CMD) for the DNNP hearing schedule for January 2024. As discussed previously, I'm reaching out to see whether Curve Lake First Nation and Hiawatha First Nation would like to provide any feedback on OPG's and/ or the CNSC's consultation and engagement to date related to the DNNP, to be included in the CMD. Due to our internal timelines, I would need any feedback by July 13th. Please let me

know if you are interested in providing this feedback and whether you think the July 13th date is feasible.

Thank you,

Laura DeCoste
[she, her, elle]

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From:	DeCoste, Laura
To:	Paige Williams; sdavison@hiawathafn.ca; Francis M. Chua; Cassandre Roy drainville; relationships@4directionsconservation.com;
Subject:	Follow up from today's meeting - RIA documents and funding application for scoping an Indigenous Knowledge study
Sent:	2023-07-27 3:20:00 PM

Hi everyone!

As discussed today, please find attached the draft RIA table of contents (edocs #7095310) and the funding application to work on scoping out the Indigenous Knowledge study (Steam 3 of the ISCF). There is no deadline associated with the Stream 3 funding opportunity.

I have also attached the following RIA related documents for your review and information:

- Appendix A (Edocs #5929618) – option to include in the report, to summarize the potential impacts to rights and interests, severity, mitigation and residual impacts.
- RIA Criteria and Decision Matrix (Edocs 6345306) - Draft criteria for assessing the severity of impacts to Indigenous and/or treaty rights and possible decision matrix for applying the assessment criteria to determine the overall severity of the impact to a right
- Guiding principles for the CNSC's approach to RIA (Edocs 6449455)

Note that the above documents are draft / the CNSC's general templates for RIAs. We are open to tailoring the documents and RIA approach with CLFN and HFN. We can chat more about any or all of these documents at our meeting on August 24 to confirm whether we are on the same page prior to collaboratively drafting the report and answer any questions you may have.

You can also find examples of the RIAs conducted for the Near Surface Disposal Facility Environmental Assessment here: https://www.nuclearsafety.gc.ca/eng/the-commission/hearings/cmd/pdf/CMD22/CMD22-H7.pdf. The RIA's are found under Reference F Environmental Assessment Report, Section 9.3 (page 139 of the EA report or 322 of the PDF) and Appendix D (page 242 of the EA report or 425 of the PDF).

Thank you,

Laura DeCoste
[she, her, elle]

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From:	DeCoste, Laura
To:	sdavison@hiawathafn.ca; Paige Williams; fchua@4directionsconservation.com; Cassandre Roy drainville; relationships@4directionsconservation.com;
Subject:	CNSC, CLFN and HFN draft workplans for 2024 and follow up from December meeting
Sent:	2024-01-05 1:47:00 PM

Follow Up Flag:	Follow up
Flag Status:	Completed

Hi everyone!

I hope you had a relaxing and happy holidays. Attached please find the draft 2024 workplans for both CLFN and HFN. We will go through these at our January 18th meeting and discuss priorities for the year! I have also attached the draft notes and presentation on the EPRRs from our December 22nd meeting. Please let me know if you have any comments or edits on the notes.

During the December meeting, 4 Directions reiterated some of their concerns about the RIA process, including their perspectives on the gaps of information and differing definition of baseline and cumulative effects. 4 Directions also indicated that they remain willing to collaborate on the assessment, but that it may not fully meet either parties expectations. As discussed, we will use the second half of our January meeting to discuss the DNNP RIA – specifically I am hoping to go through the impacts identified in the DNNP interventions and have more in-depth discussions about the concerns, and if there are any other identified impacts at this time.

From the CNSC's perspective, the goal of the RIA will be to gather available information, analyze potential impacts to rights based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts in order to make a collaborative recommendation to the Commission about potential impacts on rights from the DNNP. The report will include information/caveats about the communities concerns that have been identified and views regarding gaps in information, such as Indigenous Knowledge and land/water use data. This is an analysis and information that CNSC staff need to provide to the Commission to support their decision making regarding the DNNP and will need to be submitted as part of our Commission Member Document package. Previously, we had talked about 4 Directions drafting some of the report (context, potentially impact rights and pathways of impacts). However, due to the timeline we do need to get started on the assessment and report, based off of existing information that is on the record, available publicly and submitted by the Nations and OPG. We propose that CNSC staff draft the first version, based on all of the information we have received to date and the discussion on January 18th and then share a initial draft with you to make edits / comments, add in any additional information and guide further discussion.

We also want to reiterate that we remain open to supporting a longer-term initiative with interested Williams Treaties First Nations to gather Indigenous Knowledge and land-use data that can help inform ongoing monitoring, follow up and oversight of the DNNP, should it proceed, and future rights impact assessments to ensure that your Nation's rights and interests are protected. We look forward to working collaboratively together to find a path forward on this important work and report.

Please let me know if you have any questions and happy to talk about this all on January 18th.

Thank you,
Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Intérimaire Agente principale des politiques, Division des relations avec les Autochtones et les parties intéressées
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From:	DeCoste, Laura
To:	Paige Williams; sdavison@hiawathafn.ca; fchua@4directionsconservation.com; relationships@4directionsconservation.com; Cassandre Roy drainville;
Subject:	For CLFN and Hiawatha FN review: Draft DNNP issues tracking tables
Sent:	2024-02-09 11:21:00 AM

Follow Up Flag:	Follow up
Flag Status:	Completed

Hello everyone!

Attached you will find CLFN and Hiawatha FN specific issues tracking tables for the DNNP. The goal of the table is to include the key issues and concerns CLFN and Hiawatha FN has raised to date related to the DNNP and information about how the CNSC and OPG have responded to the concerns. The issues tracking tables will be included as an annex to the Commission Member Document (CMD) for the Licence to Construct application, should the project proceed. We are requesting CLFN and Hiawatha FN review the table to confirm whether it captures all the key issues, concerns and comments raised by CLFN and Hiawatha FN specific to the DNNP. The information included in the "OPG's Responses" column is based off of information included in OPG's documentation and/or what they have said on the record. Please let us know your views on if this information is accurate, based on your understanding. Please feel free to make edits using tracked changes or leave comments in the documents.

After this initial review, we will update the table as additional concerns are raised. Then, likely in April, we can confirm the status of the issues – this will include indicating whether the CNSC and the CLFN/ Hiawatha FN are in agreement and if not, it will include both the CNSCs and CLFN and Hiawatha FN's views. if possible, I am hoping that CLFN and Hiawatha FN are able to complete their review and provide initial feedback on these documents by March 22nd. Additionally, CNSC staff will be aiming to share a draft of the Indigenous Consultation and Engagement section of the Licence to Construct CMD in late March for CLFN's and HFN's review. Note that these timelines are tentative and dependent on the Commission decision on the first hearing.

Understanding that a lot of the content is similar between the two tables, if it is more convenient please feel free to make edits in one and I can apply to both, unless it is a community specific edit!

Please let me know if you have any questions or concerns! I will be off from February 12 – March 18 so please contact Adam if you have any questions during that period.

Thank you,
Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division

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From: DeCoste, Laura
To: Paige Williams; Consultation Lead; Kaitlin Hill; Gary Pritchard; relationships@4directionsconservation.com;
Subject: For CLFN Review - Overview of DNNP specific consultation and engagement with CLFN and proposed tentative timelines and next steps for DNNP
Sent: 2024-03-27 2:59:00 PM

Follow Up Flag: Follow up
Flag Status: Flagged

Hi all!

The purpose of this email is to request CLFN's review of CNSC documentation and provide information about proposed next steps and timelines for the DNNP Licence to Construct (LtC) application. Please note that all the information included in this email regarding the approach, next steps and timelines are dependent on the Commission's decision on the January 2024 DNNP hearing on the applicability of the EA to OPG's selected technology and are subject to change based on what the Commission decides. The proposed timelines and next steps are CNSC staff's recommendations, but we would be happy to set up a meeting in the next few weeks to go over all this information and hear your views on the proposed next steps. Please let me know if this is of interest to you and I can share some dates that work on our end.

Request for review of consultation and engagement overview:
As discussed at recent meetings with CLFN, please find attached a draft overview the consultation conducted with CLFN regarding the DNNP. This information will be included in CNSC staff's submissions to the Commission for the DNNP Licence to Construct application, should the project proceed. At this time, we are requesting that CLFN:

- Review the attached document to confirm whether it accurately reflects the consultation with your Nation to date in relation to the DNNP LtC and the key concerns raised by CLFN. Please provide any comments or edits in the document, using tracked changes. This information will be included in the Consultation Report for the DNNP Licence to Construct application.
- Review the issues tracking table shared with CLFN on February 9, 2024 (attached). A version of the table will be included as an appendix to the report.
- Provide any feedback on OPG's and CNSC's engagement and consultation to date with regards to the DNNP LtC, to be considered in the CNSC's assessment and included in the report.

If possible, please provide any feedback by April 18, 2024.

Approach to reporting on Indigenous Consultation and engagement for the DNNP LtC:
In the past, CNSC staff content and recommendations with regards to Indigenous Consultation and Engagement has been included in a section of staff's Commission Member Document (CMD) for a licensing application. However, due to the amount and complexity of the information, collaborative nature of the development of the content and importance of this topic, in relation to the DNNP Licence to Construct hearing, CNSC staff are taking the approach of having a separate Consultation Report for the DNNP Licence to Construct application. The Consultation Report along with the CMD, where the report will be referenced, will form part of the CNSC's submissions and recommendations to the Commission. This report will be included as a supporting document for the Commission hearing and a summary of this report will be included in the CMD. Key correspondence (i.e notifications, updates, letters with each Nation) will be included in an Appendix of the Consultation Report. At this time, both the CNSC staff Consultation Report and CNSC staff's CMD are tentatively scheduled to be posted publicly on June 18th, 2024. Please let me know if you have any concerns or questions with this new reporting approach.

Proposed timelines and next steps for DNNP consultation activities:
In order to increase the amount of time for collaboration on the RIA, CNSC staff are not planning to include the RIA the Consultation Report tentatively scheduled to be posted in June. Instead, CNSC staff are planning to include this information in a supplemental report, tentatively scheduled to be submitted to the Commission in September 2024, in advance of the Commission hearing which is tentatively scheduled for early October 2024. The goal of this approach is to provide additional time for CLFN and CNSC staff to work collaboratively on the RIA and on addressing the issues and concerns raised to date before finalizing these reports and documents and submitting them to the Commission to be considered as part of the record for the hearing.

Based on this, the proposed next steps and timing for the RIA and issues trackers are included in the table below. Please note that there is flexibility on the review processes and CNSC staff want to ensure that CLFN's internal review process is considered and reflected as well. CNSC staff welcome any feedback or discussion on this topic.

Product	Tentative Timing	Activity
RIA	April 12 – May 3	CNSC to share initial draft of RIA by April 12, up to and including the mitigations chapter (severity and conclusions will not be drafted yet, to ensure CNSC have accurate understanding of rights and potential impacts first). Recommend CLFN conducts review at the working level and shares initial feedback with the CNSC by May 3
Issues tracking tables	Early April	CLFN to provide initial feedback on the issues tracking tables previously shared. CNSC staff to make updates based on feedback and add in the CNSC's views on the current status of the issues and concerns
Issues tracking tables	April 25 – May 9	CSNC staff to share issues tracking tables with updates made and CNSC's views on the status. CLFN to review to confirm whether comments have been adequately addressed and include CLFN's view on the status of the issue
RIA	May 9 to May 30	CNSC to incorporate feedback from CLFN, draft severity and conclusions chapters and share for review by May 9. Recommend CLFN conducts review at the working level and share initial feedback with the CNSC by May 30. CNSC staff to incorporate feedback, conduct internal reviews and discuss RIA with CLFN in June.
RIA	Mid July to Mid August	CNSC to share full RIA with CLFN. CNSC staff recommend CLFN have leadership or any other reviews and approvals completed.
Issues tracking tables	Mid July to Mid August	CNSC staff to share updated version of issues tracking table, with any new issues raised and status of issues included. CLFN to review table and include their views on the status of the issues
Update on consultation and engagement report	August	CNSC staff to provide an updated summary of the consultation and engagement conducted for CLFN to review.
RIA	Mid August to early September	CNSC to make updates based on CLFN leadership review. Discussions had as needed.
All products	September 11	RIA, issues tracker and update on consultation due – must be finalized and submitted to CNSC staff.

Please let us know if you have any questions or concerns about this approach and process and we would be happy to discuss further, thank you!

Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
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laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Intérimaire Agente principale des politiques, Division des relations avec les Autochtones et les parties intéressées

Commission canadienne de sûreté nucléaire
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From:	Gary Pritchard
To:	DeCoste, Laura
Cc:	Levine, Adam; Debbie Balika; Heidi Whetung; Relationships and Engagement;
Subject:	Re: Question about CLFN and Hiawatha FN review of CNSC DNNP documents
Sent:	2024-04-10 10:35:05 AM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Good morning Laura.

Yes we will be providing comments however our environmental Team is busy on other vacation. Once their field work is completed we will have a better understanding of the timeline for review

Gary

Get Outlook for iOS

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Wednesday, April 10, 2024 10:24:45 AM
To: Gary Pritchard <gpritchard@4directionsconservation.com>
Cc: Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>
Subject: Question about CLFN and Hiawatha FN review of CNSC DNNP documents

Hi Gary!

I just wanted to touch-base as I recently sent CLFN and Hiawatha FN a few DNNP related documents for their review and I haven't had any response yet. I have attached the relevant emails and included the dates below as an FYI:

Issues tracking table – sent on February 9th and requested feedback by March 22nd
Consultation Report and info about next steps – sent on March 27nd and requesting feedback by April 18
RIA – just sent yesterday and requesting feedback by May 3rd

These documents will be forming part of our recommendations to the Commission, should the DNNP proceed, so we are hoping to receive feedback from the Nations to ensure their views and concerns raised are accurately reflected. I am also hoping to have DNNP focused meeting in the next few months to discuss the issues, concerns and potential impacts on rights raised to date and mitigation measures being proposed by OPG and the CNSC.

Could confirm whether 4 Directions is providing any support for the review of these documents and whether a specific 4 Directions staff been assigned to supporting CLFN and Hiawatha FN? If so, would we be able to connect with them directly to discuss the documents and next steps for the DNNP?

Thank you!

Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
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laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

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From:	Francis M. Chua
To:	DeCoste, Laura; Kayla Wright;
Cc:	Paige Williams; Consultation Lead; Levine, Adam;
Subject:	June 17 E-DOCS-#7206204-v4-Draft_Issues_and_Concerns_Table__CLFN
Attachments:	FC KW - E-DOCS-#7206204-v4-Draft_Issues_and_Concerns_Table__CLFN.docx
Sent:	2024-06-17 9:03:42 AM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Laura.

Thanks for consolidating all of this. We did one more review. Our edits are tracked. All comments in the comment boxes are addressed in the body and the adaptive nature of the document will allow us to make updates in the future; I did not check off the "resolve thread" for each comment box but I consider them adequate for now.

Thanks.

~ Francis

Sincerely,

Francis M. Chua
Supporting Curve Lake First Nation
Director - Francis Chua Consulting Inc.
Cell: 519-375-6749

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Monday, June 10, 2024 6:43 AM
To: Francis M. Chua <francis@francischua.com>; Kayla Wright <kayla@francischua.com>
Cc: Paige Williams <paigew@curvelake.ca>; Consultation Lead <ConsultationLead@curvelake.ca>; Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>
Subject: FW: CLFN response to various documents from CNSC

Hi Francis and Kayla!

As mentioned, please find attached the update CLFN DNNP issues tracking table for your review. Updates made to the table since the version that CLFN reviewed are in tracked changes. The changes that have been made based on CLFN's comments and our discussion on June 4th are highlighted in yellow.

Please provide any comments or edits to the document by Wednesday, June 19th. Let me know if you have any questions or want to discuss anything!

Thanks,

Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
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From: DeCoste, Laura
Sent: Wednesday, June 5, 2024 10:45 AM
To: Francis M. Chua <francis@francischua.com>; Kayla Wright <kayla@francischua.com>
Cc: Paige Williams <paigew@curvelake.ca>; Consultation Lead <ConsultationLead@curvelake.ca>; Levine, Adam <adam.levine@cnsc-ccsn.gc.ca>
Subject: FW: CLFN response to various documents from CNSC

Hi Francis and Kayla!

It was nice meeting with you both yesterday. As discussed, please find attached an updated version of the DNNP Consultation Report for CLFN's review. I have used comment bubbles to indicate which sections are new to CLFN and tracked changes in section CLFN already reviewed to indicate the new wording. If CLFN would like to provide feedback on CNSC's approach to consultation or OPG's engagement to date specific to the DNNP, we will include that in the report. There will also be an opportunity to include this information in the supplemental submission before the licence to construct hearing. CNSC staff will be including our final recommendations regarding consultation efforts and OPG's engagement in the supplemental submission and any information received from CLFN will be considered in our assessment and reflected in the report.

We are working to make updates to the issues tracking table based on the discussion that we had yesterday and I will share the updated copy by the end of the week.

We will be looking to finalize both documents in the coming weeks, in order to post them at the end of June. As mentioned yesterday, we do have tight timelines now and will need any additional feedback or comments by **June 17th.**

Let me know if you have any questions!

Thanks,

Laura DeCoste
[she, her, elle]

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From: DeCoste, Laura
Sent: Monday, June 3, 2024 9:59 AM

To: Francis M. Chua <francis@francischua.com>
Cc: Levine, Adam <adam.levine@cnsc-ccsn.gc.ca>; Paige Williams <paigew@curvelake.ca>; Consultation Lead <ConsultationLead@curvelake.ca>; Kayla Wright <kayla@francischua.com>
Subject: RE: CLFN response to various documents from CNSC

Good morning Francis,

Its good to hear from you, I hope you are doing good as well!

Thank you for providing feedback on the 3 documents, we will work to incorporate CLFN's feedback into these documents. No problem about the RIA, we will not be submitting the RIA in June with the DNNP Consultation Report. Rather, we will include the RIA in a supplemental submission to the Commission in advance of the DNNP Licence to Construct Hearing. This is to provide additional time for collaboration on the assessment and report. We can discuss the timelines and process further.

For the DNNP consultation report and issues tracking table – We will need to finalize these two documents in the coming weeks as they will be posted at the end of June. There have been additional changes to these documents since they were shared with CLFN based on internal reviews. I would be happy to walk through the changes that have been made and discuss the couple of comments CLFN flagged for further discussion in the issues tracking table.

Any chance you are free for a chat during the following times:

- Tuesday June 4th from 2-3pm
- Wednesday June 5th from 10:30 – 11:30am or between 2-4pm
- Thursday June 6 from 9:30 – 10:30am

We can talk about the DNNP documents and provide a bit of an update on where everything is at, as you suggested.

Thank you!

Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
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laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

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From: Francis M. Chua <francis@francischua.com>
Sent: Friday, May 31, 2024 1:45 PM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Cc: Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; Paige Williams <paigew@curvelake.ca>; Consultation Lead <ConsultationLead@curvelake.ca>; Kayla Wright <kayla@francischua.com>
Subject: CLFN response to various documents from CNSC

Hi Laura.

I hope all is well with you. I hope you had a good IEMP day as well.

We are aware that there are 4 documents that have been sent to Curve Lake for review in the last couple months. We are aware that the due dates have been shifted but that these are still behind.

Kindly accept these at this time. I don't think there are any major disconnects but I think that some of the items flagged could use some revisions.

I hope we can schedule some time with you to re-baseline where everything is at and catch up to present day. I have not had enough time yet to review the RIA draft document shared.

Thanks and have a good weekend.

~ Francis

From:	Francis M. Chua
To:	DeCoste, Laura; Kayla Wright;
Cc:	Paige Williams; Consultation Lead; Levine, Adam;
Subject:	June 17 E-DOCS-#7250336-v3-CNSC_staff's_Indigenous_Consultation_Report_DNNP Licence
Attachments:	FC KW - E-DOCS-#7250336-v3-CNSC_staff's_Indigenous_Consultation_Report_DNNP Licence.docx
Sent:	2024-06-17 10:32:29 AM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Laura.

Thanks for sending us the updated version for additional review. Please consider the comments and suggestions (tracked changes and bubbles).

Thanks.

~ Francis

Sincerely,

Francis M. Chua
Supporting Curve Lake First Nation
Director - Francis Chua Consulting Inc.
Cell: 519-375-6749

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Wednesday, June 5, 2024 10:44 AM
To: Francis M. Chua <francis@francischua.com>; Kayla Wright <kayla@francischua.com>
Cc: Paige Williams <paigew@curvelake.ca>; Consultation Lead <ConsultationLead@curvelake.ca>; Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>
Subject: FW: CLFN response to various documents from CNSC

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Let me know if you have any questions!

Thanks,

Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
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laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

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From: DeCoste, Laura
Sent: Monday, June 3, 2024 9:59 AM
To: Francis M. Chua <francis@francischua.com>
Cc: Levine, Adam <adam.levine@cnsc-ccsn.gc.ca>; Paige Williams <paigew@curvelake.ca>; Consultation Lead <ConsultationLead@curvelake.ca>; Kayla Wright <kayla@francischua.com>
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We can talk about the DNNP documents and provide a bit of an update on where everything is at, as you suggested.

Thank you!

Laura DeCoste
[she, her, elle]

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From: Francis M. Chua <francis@francischua.com>
Sent: Friday, May 31, 2024 1:45 PM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Cc: Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; Paige Williams <paigew@curvelake.ca>; Consultation Lead <ConsultationLead@curvelake.ca>; Kayla Wright <kayla@francischua.com>
Subject: CLFN response to various documents from CNSC

Hi Laura.

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I hope we can schedule some time with you to re-baseline where everything is at and catch up to present day. I have not had enough time yet to review the RIA draft document shared.

Thanks and have a good weekend.

~ Francis

B.4 Correspondence with Hiawatha First Nation

From:	DeCoste, Laura
To:	sdavison@hiawathafn.ca
Subject:	FW: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022
Sent:	2022-06-02 11:18:00 AM

Hi Sean!

Thanks for talking to me today. As discussed, please see the email below regarding the Darlington New Nuclear Project.

Let me know if you are interested in meeting on this topic or if you have any questions.

Thanks,
Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
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From: DeCoste, Laura
Sent: May 13, 2022 8:24 AM
Subject: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022

Hello,

This email is to inform you that Ontario Power Generation (OPG) is expected to submit an application to the Canadian Nuclear Safety Commission (CNSC) for a licence to construct a grid-scale Small Modular Reactor (SMR) at the Darlington New Nuclear Project (DNNP) site in **Fall 2022**. OPG announced in December 2021 that they have selected the GE Hitachi BWRX-300 SMR technology.

The DNNP site is adjacent to the existing Darlington Nuclear Generating Station, located along the north shore of Lake Ontario, in the Municipality of Clarington. OPG holds a Nuclear Power Reactor Site Preparation Licence for the DNNP to 2031. An OPG-CNSC administrative protocol for the pre-construction and construction licence application is in place to allow for open and transparent processes. The protocol is available on the CNSC website located here: https://www.nuclearsafety.gc.ca/eng/pdfs/Protocols/December-2021-Protocol-Between-Ontario-Power-Generation-and-CNSC-Darlington-New-Nuclear-Project-eng.pdf

The CNSC will be offering participant funding to support involvement in the regulatory review process, including submission review, the consultation and engagement process and the Commission hearing. It is anticipated that the Commission hearing will be held by the end of 2024, however these dates have yet to be determined. More information about participant funding and the Commission hearing will be provided in the coming months.

Opportunity for early engagement:

CNSC staff are available to organize a meeting anytime to provide additional details about OPG's potential licence application submission, the regulatory process, information about timelines, answer questions, and discuss how you would like to be consulted moving forward. CNSC staff are initiating engagement prior to receiving OPG's licence application as we are committed to collaborating to develop a mutually agreeable consultation and engagement process early on in the regulatory process with you and your Nation.

Please let me know if you are interested in having this meeting or have any questions.

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	Francis M. Chua
To:	Darlington New Nuclear Project / Nouveau projet nucleaire de Darlington
Cc:	Sean Davison; cassandreroydrainville@gmail.com; Kayla Wright; Trisha Shearer; Ducros, Caroline; DeCoste, Laura; Gary Pritchard; info@4directionsconservation.com; Zenobi, Adam;
Subject:	Hiawatha FN Submission: Join the CNSC's workshop on April 4 to discuss Ontario Power Generation's Updated Plant Parameter Envelope and Environmental Impact Statement Review reports
Attachments:	Hiawatha FN CNSC OPG DNNP PPE and EIS.pdf
Sent:	2023-03-20 4:23:34 PM

Good afternoon.

I am submitting this on behalf of Hiawatha First Nation.

Thank you.

Sincerely,
Francis Chua
Support to Hiawatha First Nation
519-375-6749

From: Zenobi, Adam <adam.zenobi@cnsc-ccsn.gc.ca>
Sent: Friday, February 17, 2023 11:10 AM
To: Francis M. Chua <francis@francischua.com>
Cc: Sean Davison <sdavison@hiawathafn.ca>; cassandreroydrainville@gmail.com <cassandreroydrainville@gmail.com>; Kayla Wright <kayla@francischua.com>; Trisha Shearer <directorofoperations@hiawathafn.ca>; Darlington New Nuclear Project / Nouveau projet nucleaire de Darlington <dnnp-npnd@cnsc-ccsn.gc.ca>; Ducros, Caroline <Caroline.Ducros@cnsc-ccsn.gc.ca>; DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Subject: Join the CNSC's workshop on April 4 to discuss Ontario Power Generation's Updated Plant Parameter Envelope and Environmental Impact Statement Review reports

Hello Francis,

As an Indigenous Nation with an interest in the review of Ontario Power Generation's Updated Plant Parameter Envelope and Environmental Impact Statement Review reports for the Darlington New Nuclear Project (DNNP), as well as a recipient of participant funding, the Canadian Nuclear Safety Commission (CNSC) would like to invite Hiawatha First Nation to participate in the following related workshop. Please see below for more details. The CNSC is also happy to have separate meetings with HFN to discuss the DNNP, should you be interested.

Please note that written comments on the two reports are due to the CNSC by March 20, 2023. Comments may be submitted via e-mail to dnnp-npnd@cnsc-ccsn.gc.ca or may be posted online on the *Let's Talk Nuclear Safety* forum.

WORKSHOP INVITATION

Join the Canadian Nuclear Safety Commission (CNSC), either in-person or online, on April 4th to discuss Ontario Power Generation's (OPG's) Darlington New Nuclear Project (DNNP). The focus will be on the following documents submitted to the CNSC as part of OPG's DNNP Licence to Construct application:

- Updated Plant Parameter Envelope Report
- Environmental Impact Statement Review Report

These documents were submitted by OPG to CNSC to demonstrate that the GE Hitachi BWRX-300 remains within the bounds of the approved environmental assessment. Particular attention will be given to the Indigenous Nations and communities, the public and stakeholder reviews of the documents. These documents are currently posted on the *Let's Talk Nuclear Safety* forum for review and comment until March 20, 2023.

The workshop will be a one day, hybrid event. Attendees will be welcome to join in-person at a location TBD in the Municipality of Clarington or online through Zoom, a virtual meeting platform. Registration is required.

Click here to register or follow the link below:
https://us06web.zoom.us/webinar/register/WN_j-vKAPb4QBSBC_DAMctqIA

In-person attendance
Date: Tuesday, April 4, 2023
Time: 9:00 a.m. to 4:00 p.m. (EST)
Location: Municipality of Clarington (exact location TBD and will be shared with registered participants prior to the event)

Online attendance
Date: Tuesday, April 4, 2023
Time: 9:00 a.m. to 4:00 p.m. (EST)
Platform: Zoom (link will be provided prior to the event)

Please note the registration period for in-person and online attendance closes on March 15, 2023.

About the Workshop
The workshop will serve as an opportunity to discuss the Indigenous Nations and communities, public and stakeholder review of these documents. Comments received on these documents will inform the contents of the workshop. CNSC will not be making any recommendations or decisions regarding the licensing process for OPG's DNNP during this workshop. Feedback received during the workshop will help the CNSC to better understand this project and may inform CNSC recommendations to the Commission at future licensing hearings.

An event schedule and additional workshop information will be shared with registered guests in advance of the event.

The workshop will not be recorded.

Questions and accessibility assistance
If you have any questions about the workshop or the registration process, or to request an accommodation for accessibility, please contact us by e-mail at dnnp-npnd@cnsc-ccsn.gc.ca or call 343-548-2828.

Thank you,

Sent on behalf of:

Caroline Ducros (PhD)
(she/they; elle/iel)

Director General
Directorate of Advanced Reactor Technologies (DART)

Canadian Nuclear Safety Commission
www.nuclearsafety.gc.ca
613-862-9017

Directeur Général,
Direction des technologies de réateurs avancés (DTRA)
Commission Canadienne de sûreté nucléaire
www.nuclearsafety.gc.ca
613-862-9017

March 20, 2023

Caroline Ducros (PhD)
Director General
Directorate of Advanced Reactor Technologies (DART)
Canadian Nuclear Safety Commission
613-862-9017

Delivered by Email (dnnp-npnd@cnsc-ccsn.gc.ca)

Dear Dr. Ducros,

RE: Hiawatha FN's partial review of Ontario Power Generation's Updated Plant Parameter Envelope and Environmental Impact Statement Review reports

On behalf of our Consultation Department at Hiawatha First Nation (HFN), we are writing to submit to you Hiawatha FN's **partial** review of Ontario Power Generation's Updated Plant Parameter Envelope and Environmental Impact Statement Review reports. Hiawatha FN has accepted the review and recommendations from 4 Directions of Conservation Consulting Services. Please refer to details in Appendix A for details. That said, there are other thoughts that have not yet been documented and therefore cannot be shared in time for the deadline of March 20, 2023.

Hiawatha FN's Core Consultation and Land Resource Development office was established to address the Crown's (Federal and Provincial Governments) "Duty to Consult." This is in response to the Supreme Court of Canada decision relating to the Crown's "Duty to Consult" aboriginal communities regarding proposed land development when their treaty and traditional lands are impacted.

Our mandate is to engage with governments and private sector proponents on land and resource matters that may affect the Treaty and inherent rights of our First Nation. Hiawatha First Nation's traditional territory has been affected by numerous and various developments, which have impacted our traditional territory, way of life, and sustainability of Hiawatha. Our traditional ways are derived from the land. Hiawatha is not opposed to development. We would like to be reassured that wildlife, habitat, air, and water tributaries would be adequately protected from contamination for 7 generations without upsetting the balanced eco-system/relationship we have with our Mother Shka-ki-mi-kwe (Mother Earth).

Our values grow from the culture from which we are born into and live with and our beliefs and attitudes emerge from our values. As Mississaugi people from the Mississauga Nation, we try to live a healthy way of life "Mino Bimaadiziwin" through the teachings passed down from ancestors. These teachings include Seven Grandfathers teaching that was given to us by the Creator. This story has been passed down many generations. These foundational teachings include; wisdom, love, respect, bravery, honesty, humility, and truth.

All of the above combined create a balance of spiritual, emotional, physical and mental being. They are the cornerstones of our belief system and the formula for maintaining the delicate balance between Shka-ki-mi-kwe (Mother Earth) and all her inhabitants. We have a strong connection to Shka-ki-mi-kwe and only use what is necessary from her. We believe that all things are connected and are taught that if we look after our Mother she will look after us. With all decisions made we always consider the effects our choices will make on the next seven generations just as our ancestors have done for us. We often turn to our Elders who hold great knowledge of Shka-ki-mi-kwe that no one else possesses. Their knowledge is held in their hearts and minds to be passed by oral tradition for the next generations.

We thank the CNSC for providing participant funding; it has helped in our ability to conduct these reviews and will help in participating at the upcoming virtual meeting on April 4.

Sincerely,

Sean Davison
Lands & Resource Consultation
Consultation and Land Resource Development Office
Hiawatha First Nation

Francis Chua
Support to Hiawatha First Nation

cc:
Chief Laurie Carr, Hiawatha First Nation
Trisha Shearer, Director of Operations, Hiawatha First Nation
Mandy McGonigle, Archaeology, Hiawatha First Nation
Gary Pritchard, CEO & Indigenous Conservation Ecologist, 4 Directions of Conservation Consulting Services

Appendix A:

4 Directions of Conservation Consulting Services review of Ontario Power Generation's Updated Plant Parameter Envelope and Environmental Impact Statement Review reports

March 17, 2023

Attn: **Consultation Department**
Hiawatha First Nation
431 Hiawatha Line
Hiawatha, ON. K9J 0E6
P: (705) 295-4421

RE: Darlington New Nuclear Project Environmental Impact Statement Review Report for SMR BWRX-300 Review

4 Directions File No: 23-033

4 Directions of Conservation Consulting Services (4 Directions) is pleased to present our review and recommendations regarding documents prepared by Calian Group Ltd. These documents were presented to Hiawatha First Nation (HFN) from Ontario Power Group (OPG) under their Duty to Consult and Accommodate. 4 Directions' review of the report, *Darlington New Nuclear Project Environmental Impact Statement Review Report for SMR BWRX-300 Review,* is broken down into two main sections. Relevant statements, questions, and concerns are identified in the following document under their respective headings:

- Concerns Regarding Michi Saagiig Inherent and Treaty Rights
- Concerns Regarding the Environment

Although it should be noted that 4 Directions acknowledges that the two above-mentioned topics are inextricably linked, the review has been organized under these section headings for clarity purposes. After these sections, 4 Directions provides a brief summary of identified recommendations for OPG, followed by closing remarks.

Background

OPG's report, titled *Darlington New Nuclear Project Environmental Impact Statement Review Report for SMR BWRX-300 Review* was reviewed under the provided context:

"*The DNNP, is a proposed new nuclear power plant on the north shore of Lake Ontario in the Municipality of Clarington, within the Regional Municipality of Durham. More precisely, the DNNP is located on the existing Darlington Nuclear (DN) site of Ontario Power Generation (OPG), about 70 km east of Toronto.*

The DNNP was subject to an environmental assessment (EA) under the Canadian Environmental Assessment Act (CEAA). The scope for the assessment included the site preparation, construction, operation, and decommissioning of up to four new nuclear power reactors to produce up to 4,800 megawatts of electrical generating capacity.

When the EIS was conducted in 2006 to 2009, no specific reactor technology was selected, rather, the EIS considered a Plant Parameter Envelope (PPE) that encompasses limiting design parameters from the reactor technologies under consideration for the DNNP at that time, as the basis for the EA. It was identified that the PPE may need to be modified when the specific reactor technology is selected.

For the DNNP, a federal joint review panel (JRP) conducted a review of the EA and considered the licence application to prepare the site for the Project. The JRP concluded that "the Project is not likely to cause significant adverse environmental effects, provided the mitigation measures proposed and commitments made by OPG during the review, and the JRP's recommendations are implemented." In May 2012, the Government of Canada (GOC) accepted the JRP's conclusions for the DNNP as well as the JRP's recommendations, in accordance with the GOC response, for the DNNP. Following that, the Canadian Nuclear Safety Commission (CNSC) issued a 10-year Power Reactor Site Preparation Licence (PRSL 18.00/2022) for the DNNP. The JRP's recommendations that the GOC assigned to OPG and commitments that OPG made during the EA process were consolidated in the Darlington New Nuclear Project Commitment Report NK054-REP-01210-00078-R007 [1].

Following OPG's application to renew the PRSL in 2020, the CNSC renewed the PRSL for another 10 years in 2021. For this licence renewal application, OPG had not initiated any licensed activities nor had OPG selected a reactor technology for DNNP, and the Project scope remained unchanged from that assessed in 2012. CNSC staff confirmed during the PRSL renewal public hearing that the EA accepted by the JRP and the GOC is still valid. There is no expiry on an EA decision as long as the scope of that project remains within the scope of the original EA. One of the commitments listed in the DNNP Commitment report is D-P-12.1(a) - Comprehensive Environmental Impact Statement Review stated that "Once the specific technology is selected and design information is available, OPG will comprehensively review the EIS to ensure that the results of the EIS remain valid. If this review indicates either a gap or a condition not bounded by the EIS, OPG will initiate corrective actions as necessary. This may include mitigation options."

In December 2021, OPG selected the BWRX-300 for deployment at the DNNP site. OPG has been working with the vendor, GE Hitachi Nuclear Energy (GEH), to progress the design of the BWRX-300 and develop the required documents to support a Licence to Construct (LTC) Application. To fulfill the above commitment, OPG has conducted an EIS Review for the selected BWRX-300 which is the purpose of this EIS Review document.

As the EIS used the PPE as the basis for the environmental assessment, the commitment on PPE as listed in D-C-3.1 Preliminary Safety Analysis and Design [1] as stated below also needs to be considered in the EIS review: "After the Licence to Prepare Site is issued the vendor will demonstrate to OPG's satisfaction that the design of the facility fits within the values used in the Plant Parameter Envelope. If the Nuclear Facility is not bounded by the Plant Parameter Envelope, the Envelope will be updated and appropriate assessment of the impacts will be undertaken or the design modified, as required."

The GEH BWRX-300 reactor is a SMR using boiling water reactor (BWR) technology. The electrical power output for each reactor is about 300 MWe and its design life is 60 years. The BWRX-300 is a smaller reactor when compared to those evaluated for the PPE in the 2009 EIS as well as with the currently operating reactors at the DN site, both in electrical production and in physical size. BWR technology was considered during the development of the PPE for the EIS; however, insufficient information was submitted by the vendor in time for inclusion in developing the PPE. The JRP indicated in its EA report that "should the Government of Ontario decide to include boiling water-type reactors in its procurement process, the plant parameter envelope would be updated accordingly."

(Executive Summary, DNNP EIS Review Report for SMR BWRX-300).

1.0 Concerns Regarding Michi Saagiig Rights

1.1.1.1 Statement

The proposed project is situated within the Gunshot Treaty. Given this, Michi Saagiig Inherent and Treaty Rights, including harvesting rights and sovereignty over water-related matters, must be upheld throughout all project works (Curve Lake First Nation, 2013; Chiefs of Ontario, 2008).

1.1.1.2 Question

Why is there no mention of the Gunshot Treaty within the land acknowledgment and in the report? How are Michi Saagiig Inherent and Treaty Rights upheld throughout the provided report?

1.1.1.3 Recommendation

The Gunshot Treaty should be included in the report and Michi Saagiig Inherent and Treaty Rights incorporated throughout the report and in the project.

2.0 Concerns Regarding the Environment

2.1 Cultural Keystone Species

2.1.1.1 Statement

There is no mention of the Cultural Keystone Species of the Michi Saagiig in any description of the biotic communities mentioned in the document. Cultural Keystone Species are protected under the Michi Saagig Treaty Rights. Any species considered a cultural keystone species is therefore protected under the Williams Treaty. Additionally, any alterations to the habitat that elicit negative effects on these species is infringing upon the Michi Saagiig Treaty Rights.

2.1.1.2 Question

Why were Cultural Keystone Species of the Michi Saagiig not included or mentioned within the document?

2.1.1.3 Recommendation

Observations of Cultural Keystone Species should be included in the EIS and subsequent monitoring to ensure that these species and their habitats are protected. Support in this action can be provided through continued consultation and engagement with First Nations communities.

2.2 Other Environmental Concerns

2.2.1 Quotation

"The EIS identified the Deepwater Sculpin, Lake Sturgeon, Atlantic Salmon, and American Eel as fish species at risk. Since the EIS concluded that the nearshore area does not contain critical habitat for any of these species, (EIS p. 4-45) and significant interactions with the existing DNGS have not been detected in monitoring studies to date (although entrainment of some Deepwater Sculpin has recently been identified), there is no further concern for these species."

Page 43

2.2.1.1 Statement

The species listed in this quote include Cultural Keystone Species to the Michi Saagiig

2.2.1.2 Recommendation

While the EIS does not identify a risk to these species, they should be prioritized in any monitoring of the aquatic community to ensure that there is no adverse effect on any Culturally Significant species in this community.

2.2.2 Quotation

"*The assessment of changes to the hydrology was completed [17], and it determined there will be negligible hydrological change to the wetlands and ponds. For noise and dust, the studies are being completed. If the evaluation shows adverse effects on aquatic receptors, OPG will implement mitigation measures to ensure that there are no significant residual adverse environmental effects.*"

Page 44

2.2.2.1 Statement

Wetlands are incredibly important to Michi Saagiig culture and way of life and are protected by Treaty Rights. Any impacts to a wetland as part of this project are an infringement on these constitutionally protected rights. Furthermore, under the 2008 Water Declaration: "First Nations in Ontario have our own territories that includes the waters, which include the rain waters, waterfalls, rivers, streams, creeks, lakes, mountain springs, swamp springs, bedrock water veins, snow, oceans, icebergs, and the seas". The Michi Saagiig have rights and responsibilities to these wetlands and ponds on their territory.

2.2.2.2 Recommendation

Proponents should provide more clarity on the negligible changes expected to occur in wetlands and ponds and demonstrate how they will continue to monitor wetlands and ponds to ensure they are protected during and after the project.

2.2.3 Quotation

"*These interactions include removal of bat habitat as well as potential interactions between the Project and bat species and bat habitats that may be retained on the DNNP site*."

Page 44

2.2.3.1 Statement

As indicated in the EIS, four bat species identified on the DNNP site are listed as endangered (Little Brown Myotis, Northern Myotis, Eastern Small-footed Myotis, and Tri-colored Bat). It is important that these species and their habitat are protected from any adverse effects related to this project.

2.2.3.2 Recommendation

4 Directions has written a response to the Darlington New Nuclear Project AAF and CPAF on behalf of Curve Lake First Nation that speaks to the need for monitoring the effect of dust and noise on the bat populations and the invertebrate community, specifically aerial insectivore prey for bats. The suggestions given in that document related to monitoring should be incorporated into this project.

2.2.4 Quotation

"*The assessment of changes to the hydrology was completed [17], and it determined there will be negligible hydrological change to amphibian and reptile habitat.*"

Page 45

2.2.4.1 Statement

Many amphibians and reptiles are Culturally Significant species and are protected under Michi Saagiig treaty rights. The Michi Saagiig also have rights and responsibilities to the wetland and ponds on their territory.

2.2.4.2 Recommendation

The proponents need to clarify how they will be monitoring amphibian and reptile communities and habitat to ensure this project does not infringe on Michi Saagiig Inherent and Treaty rights. Wetland community surveys should be done prior to, and after construction to ensure the protection of wetland habitat and any Cultural Keystone Species making use of this habitat

2.2.5 Quotation

"However, periodic and short-term disruption to wildlife travel along the east-west wildlife corridor are expected during the Site Preparation and Construction phase of the Project."

Page 45

2.2.5.1 Statement

Many Culturally significant species could be using this corridor and disruptions to their movement patterns can be disruptive to their overall health. This work may also affect harvesting and hunting in the area, particularly if it disrupts wildlife movement.

2.2.5.2 Questions

Have the proponents considered how this disruption may infringe on Michi Saagiig inherent and treaty rights?

Has there been considerations for how workers will interact with any Michi Saagiig they may encounter practicing these rights during the project?

2.2.5.3 Recommendation

The proponents should clarify the process they are taking to reduce disruption and other associated harm to wildlife (e.g vehicle mortality). Proponents should clarify how this work will not infringe on Michi Saagiig Inherent and Treaty Rights.

2.2.6 Quotation

"The net loss of approximately 24 to 34 ha of on-site habitat currently used as butterfly stopover area migration."

Page 55

2.2.6.1 Statement

There is no mention of Monarch butterflies (*Danaus plexippus*) in this area, do they use this habitat? Monarch butterflies are listed as endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC. 2021). There is also no mention of milkweed (*Asclepias spp*.), a species critical in the monarch lifecycle. Have surveys for milkweed been carried out? Does OPG have a plan in place to restore lost habitat or lost milkweed plants which are essential components in the monarch life cycle?

2.2.6.2 Recommendation

Proponents should clarify how they will monitor the area, including an assessment of milkweed plants, especially in areas that will be affected by project activities. Proponents should also specify how they will restore this habitat and work with HFN to develop this restoration protocol.

2.2.7 Quotation

"Decrease in populations of breeding birds on the DN Site. Migrant songbirds and their habitat, winter raptor feeding and roosting"

Table 6, Page 56

2.2.7.1 Statement

Many birds, especially raptors, are Culturally Significant species to the Michi Saagiig. The full effects of this habitat loss should be known, specificially which birds might be affected and how, and a plan to restore habitat should be in place.

2.2.7.2 Recommendation

The proponents should clarify how they will monitor the bird communities, including the identification of any Cultural Keystone Species, that may be affected by project activities. Proponents should also specify how they will restore this habitat after the project and work with HFN to develop these restoration plans.

Summary of Recommendations

- The Gunshot Treaty should be included in the report and Michi Saagiig Inherent and Treaty Rights incorporated throughout the report and in the project.

- Cultural Keystone Species should be included in all environment assessments and monitoring aspects of this project.

- Proponents should provide more clarity on the negligible changes expected to occur in wetlands and ponds and demonstrate how they will continue to monitor wetlands and ponds to ensure they are protected during and after the project.

- The proponents need to clarify how they will be monitoring amphibian and reptile communities and habitat to ensure this project does not infringe on Michi Saagiig Inherent and Treaty rights. Wetland community surveys should be done prior to, and after construction to ensure the protection of wetland habitat and any Cultural Keystone Species making use of this habitat.

- The proponents should clarify the process they are taking to reduce disruption and other associated harm to wildlife (e.g vehicle mortality). Proponents should clarify how this work will not infringe on Michi Saagiig Inherent and Treaty Rights.

- Proponents should clarify how they will monitor butterfly habitat, including an assessment of milkweed plants, especially in areas that will be affected by project activities. Proponents should also specify how they will restore this habitat and work with HFN to develop this restoration protocol.

- Incorporate the Recommendations from the 4 Directions response to the DNNP AAR and CPAF related to bat and invertebrate monitoring into future monitoring related to this project.

- The proponents should clarify how they will monitor the bird communities, including the identification of any Cultural Keystone Species, that may be affected by project activities. Proponents should also specify how they will restore this habitat after the project and work with HFN to develop these restoration plans.

Closing Remarks

4 Directions staff are generally satisfied with the information provided within the DNNP EIS Review Report for SMR BWRX-300. As noted in the summary of recommendations, 4 Directions encourages OPG to provide further clarity regarding how Indigenous Inherent and Treaty rights are upheld throughout the construction of the SMR and the post-construction monitoring for this project.

We trust that this information aids in your engagement process and the next steps forward. If you have any questions, please do not hesitate to contact us.

Miigwetch,

[redacted]

Matthew Bolding, MSc
Wetland Ecologist
4 Directions of Conservation Consulting Services.
(e): mbolding@4directionsconservation.com

Courtney Robichaud, PhD
Senior Ecologist
4 Directions of Conservation Consulting Services.
(e): crobichaud@4directionsconservation.com

Works Cited

Chiefs of Ontario. (2008). Water Declaration of the First Nations in Ontario; Chiefs of Ontario: Toronto, ON, Canada; Available online: http://www.onwa.ca/upload/documents/coo-water-declaration.pdf

Hiawatha First Nation. (2017). Hiawatha First Nation Consultation and Accommodation Standards. Available at: http://www.hiawathafirstnation.com/wp-content/uploads/2020/02/Consutation-Accommodation-Standards-1-electronic-copy.pdf

From:	DeCoste, Laura
To:	Cassandre Roy drainville
Cc:	francis@francischua.com; relationships@4directionsconservation.com;
Subject:	RE: Request for any feedback on OPG's and/ or the CNSC's consultation and engagement related to the DNNP
Sent:	2023-07-18 8:26:00 AM

Hi Cassandre!

Thank you for providing this and the comments on the updates to Regdoc 3.2.2. Much appreciated!

Laura

From: Cassandre Roy drainville <cassandreroydrainville@gmail.com>
Sent: July 14, 2023 3:31 PM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Cc: francis@francischua.com; relationships@4directionsconservation.com
Subject: Re: Request for any feedback on OPG's and/ or the CNSC's consultation and engagement related to the DNNP

Hi Laura,

Here's the text for DNNP CMD about engagement conducted by OPG with Curve Lake and Hiawatha on the Project.

Please let us know if you have any changes to make to the text.

Cassandre

Le jeu. 29 juin 2023, à 14 h 37, DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca> a écrit :

> Hi everyone!
>
> The CNSC is currently working on the Commission Member Document (CMD) for the DNNP hearing schedule for January 2024. As discussed previously, I'm reaching out to see whether Curve Lake First Nation and Hiawatha First Nation would like to provide any feedback on OPG's and/ or the CNSC's consultation and engagement to date related to the DNNP, to be included in the CMD. Due to our internal timelines, I would need any feedback by July 13th. Please let me

know if you are interested in providing this feedback and whether you think the July 13th date is feasible.

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	DeCoste, Laura
To:	Paige Williams; sdavison@hiawathafn.ca; Francis M. Chua; Cassandre Roy drainville; relationships@4directionsconservation.com;
Subject:	Follow up from today's meeting - RIA documents and funding application for scoping an Indigenous Knowledge study
Sent:	2023-07-27 3:20:00 PM

Hi everyone!

As discussed today, please find attached the draft RIA table of contents (edocs #7095310) and the funding application to work on scoping out the Indigenous Knowledge study (Steam 3 of the ISCF). There is no deadline associated with the Stream 3 funding opportunity.

I have also attached the following RIA related documents for your review and information:

- Appendix A (Edocs #5929618) – option to include in the report, to summarize the potential impacts to rights and interests, severity, mitigation and residual impacts.
- RIA Criteria and Decision Matrix (Edocs 6345306) - Draft criteria for assessing the severity of impacts to Indigenous and/or treaty rights and possible decision matrix for applying the assessment criteria to determine the overall severity of the impact to a right
- Guiding principles for the CNSC's approach to RIA (Edocs 6449455)

Note that the above documents are draft / the CNSC's general templates for RIAs. We are open to tailoring the documents and RIA approach with CLFN and HFN. We can chat more about any or all of these documents at our meeting on August 24 to confirm whether we are on the same page prior to collaboratively drafting the report and answer any questions you may have.

You can also find examples of the RIAs conducted for the Near Surface Disposal Facility Environmental Assessment here: https://www.nuclearsafety.gc.ca/eng/the-commission/hearings/cmd/pdf/CMD22/CMD22-H7.pdf. The RIA's are found under Reference F Environmental Assessment Report, Section 9.3 (page 139 of the EA report or 322 of the PDF) and Appendix D (page 242 of the EA report or 425 of the PDF).

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
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From:	DeCoste, Laura
To:	sdavison@hiawathafn.ca; Paige Williams; fchua@4directionsconservation.com; Cassandre Roy drainville; relationships@4directionsconservation.com;
Subject:	CNSC, CLFN and HFN draft workplans for 2024 and follow up from December meeting
Sent:	2024-01-05 1:47:00 PM

Follow Up Flag:	Follow up
Flag Status:	Completed

Hi everyone!

I hope you had a relaxing and happy holidays. Attached please find the draft 2024 workplans for both CLFN and HFN. We will go through these at our January 18th meeting and discuss priorities for the year! I have also attached the draft notes and presentation on the EPRRs from our December 22nd meeting. Please let me know if you have any comments or edits on the notes.

During the December meeting, 4 Directions reiterated some of their concerns about the RIA process, including their perspectives on the gaps of information and differing definition of baseline and cumulative effects. 4 Directions also indicated that they remain willing to collaborate on the assessment, but that it may not fully meet either parties expectations. As discussed, we will use the second half of our January meeting to discuss the DNNP RIA – specifically I am hoping to go through the impacts identified in the DNNP interventions and have more in-depth discussions about the concerns, and if there are any other identified impacts at this time.

From the CNSC's perspective, the goal of the RIA will be to gather available information, analyze potential impacts to rights based on our current understanding and identify any potential mitigation and/or accommodation measures that could help to avoid, reduce, or compensate for any identified impacts in order to make a collaborative recommendation to the Commission about potential impacts on rights from the DNNP. The report will include information/caveats about the communities concerns that have been identified and views regarding gaps in information, such as Indigenous Knowledge and land/water use data. This is an analysis and information that CNSC staff need to provide to the Commission to support their decision making regarding the DNNP and will need to be submitted as part of our Commission Member Document package. Previously, we had talked about 4 Directions drafting some of the report (context, potentially impact rights and pathways of impacts). However, due to the timeline we do need to get started on the assessment and report, based off of existing information that is on the record, available publicly and submitted by the Nations and OPG. We propose that CNSC staff draft the first version, based on all of the information we have received to date and the discussion on January 18th and then share a initial draft with you to make edits / comments, add in any additional information and guide further discussion.

We also want to reiterate that we remain open to supporting a longer-term initiative with interested Williams Treaties First Nations to gather Indigenous Knowledge and land-use data that can help inform ongoing monitoring, follow up and oversight of the DNNP, should it proceed, and future rights impact assessments to ensure that your Nation's rights and interests are protected. We look forward to working collaboratively together to find a path forward on this important work and report.

Please let me know if you have any questions and happy to talk about this all on January 18th.

Thank you,
Laura DeCoste
[she, her, elle]

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From:	DeCoste, Laura
To:	Paige Williams; sdavison@hiawathafn.ca; fchua@4directionsconservation.com; relationships@4directionsconservation.com; Cassandre Roy drainville;
Subject:	For CLFN and Hiawatha FN review: Draft DNNP issues tracking tables
Sent:	2024-02-09 11:21:00 AM

Follow Up Flag:	Follow up
Flag Status:	Completed

Hello everyone!

Attached you will find CLFN and Hiawatha FN specific issues tracking tables for the DNNP. The goal of the table is to include the key issues and concerns CLFN and Hiawatha FN has raised to date related to the DNNP and information about how the CNSC and OPG have responded to the concerns. The issues tracking tables will be included as an annex to the Commission Member Document (CMD) for the Licence to Construct application, should the project proceed. We are requesting CLFN and Hiawatha FN review the table to confirm whether it captures all the key issues, concerns and comments raised by CLFN and Hiawatha FN specific to the DNNP. The information included in the "OPG's Responses" column is based off of information included in OPG's documentation and/or what they have said on the record. Please let us know your views on if this information is accurate, based on your understanding. Please feel free to make edits using tracked changes or leave comments in the documents.

After this initial review, we will update the table as additional concerns are raised. Then, likely in April, we can confirm the status of the issues – this will include indicating whether the CNSC and the CLFN/ Hiawatha FN are in agreement and if not, it will include both the CNSCs and CLFN and Hiawatha FN's views. if possible, I am hoping that CLFN and Hiawatha FN are able to complete their review and provide initial feedback on these documents by March 22nd. Additionally, CNSC staff will be aiming to share a draft of the Indigenous Consultation and Engagement section of the Licence to Construct CMD in late March for CLFN's and HFN's review. Note that these timelines are tentative and dependent on the Commission decision on the first hearing.

Understanding that a lot of the content is similar between the two tables, if it is more convenient please feel free to make edits in one and I can apply to both, unless it is a community specific edit!

Please let me know if you have any questions or concerns! I will be off from February 12 – March 18 so please contact Adam if you have any questions during that period.

Thank you,
Laura DeCoste
[she, her, elle]

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From: DeCoste, Laura
To: sdavison@hiawathafn.ca; Tom Cowie; Gary Pritchard; relationships@4directionsconservation.com;
Subject: For Hiawatha FN Review - Overview of DNNP specific consultation and engagement with Hiawatha FN and proposed tentative timelines and next steps for DNNP
Sent: 2024-03-27 3:03:00 PM

Follow Up Flag: Follow up
Flag Status: Completed

Hi all!

The purpose of this email is to request Hiawatha FN's review of CNSC documentation and provide information about proposed next steps and timelines for the DNNP Licence to Construct (LtC) application. Please note that all the information included in this email regarding the approach, next steps and timelines are dependent on the Commission's decision on the January 2024 DNNP hearing on the applicability of the EA to OPG's selected technology and are subject to change based on what the Commission decides. The proposed timelines and next steps are CNSC staff's recommendations, but we would be happy to set up a meeting in the next few weeks to go over all this information and hear your views on the proposed next steps. Please let me know if this is of interest to you and I can share some dates that work on our end.

Request for review of consultation and engagement overview:
As discussed at recent meetings with Hiawatha FN, please find attached a draft overview the consultation conducted with Hiawatha FN. This information will be included in CNSC staff's submissions to the Commission for the DNNP Licence to Construct application, should the project proceed. At this time, we are requesting that Hiawatha FN:

- Review the attached document to confirm whether it accurately reflects the consultation with your Nation to date in relation to the DNNP LtC and the key concerns raised by Hiawatha FN. Please provide any comments or edits in the document, using tracked changes. This information will be included in the Consultation Report for the DNNP Licence to Construct application.
- Review the issues tracking table shared with Hiawatha FN on February 9, 2024 (attached). A version of the table will be included as an appendix to the report.
- Provide any feedback on OPG's and CNSC's engagement and consultation to date with regards to the DNNP LtC, to be considered in the CNSC's assessment and included in the report.

If possible, please provide any feedback by April 18, 2024.

Approach to reporting on Indigenous Consultation and engagement for the DNNP LtC:
In the past, CNSC staff content and recommendations with regards to Indigenous Consultation and Engagement has been included in a section of staff's Commission Member Document (CMD) for a licensing application. However, due to the amount and complexity of the information, collaborative nature of the development of the content and importance of this topic, in relation to the DNNP Licence to Construct hearing, CNSC staff are taking the approach of having a separate Consultation Report for the DNNP Licence to Construct application. The Consultation Report along with the CMD, where the report will be referenced, will form part of the CNSC's submissions and recommendations to the Commission. This report will be included as a supporting document for the Commission hearing and a summary of this report will be included in the CMD. Key correspondence (i.e notifications, updates, letters with each Nation) will be included in an Appendix of the Consultation Report. At this time, both the CNSC staff Consultation Report and CNSC staff's CMD are tentatively scheduled to be posted publicly on June 18th, 2024. Please let me know if you have any concerns or questions with this new reporting approach.

Proposed timelines and next steps for DNNP consultation activities:
In order to increase the amount of time for collaboration on the RIA, CNSC staff are not planning to include the RIA the Consultation Report tentatively scheduled to be posted in June. Instead, CNSC staff are planning to include this information in a supplemental report, tentatively scheduled to be submitted to the Commission in September 2024, in advance of the Commission hearing which is tentatively scheduled for early October 2024. The goal of this approach is to provide additional time for Hiawatha FN and CNSC staff to work collaboratively on the RIA and on addressing the issues and concerns raised to date before finalizing these reports and documents and submitting them to the Commission to be considered as part of the record for the hearing.

Based on this, the proposed next steps and timing for the RIA and issues trackers are included in the table below. Please note that there is flexibility on the review processes and CNSC staff want to ensure that Hiawatha FN's internal review process is considered and reflected as well. CNSC staff welcome any feedback or discussion on this topic.

Product	Tentative Timing	Activity
RIA	April 12 – May 3	CNSC to share initial draft of RIA by April 12, up to and including the mitigations chapter (severity and conclusions will not be drafted yet, to ensure CNSC have accurate understanding of rights and potential impacts first). Recommend Hiawatha FN conducts review at the working level and shares initial feedback with the CNSC by May 3 th
Issues tracking tables	Early April	Hiawatha FN to provide initial feedback on the issues tracking tables previously shared. CNSC staff to make updates based on feedback and add in the CNSC's views on the current status of the issues and concerns
Issues tracking tables	April 25 – May 9	CSNC staff to share issues tracking tables with updates made and CNSC's views on the status. Hiawatha FN to review to confirm whether comments have been adequately addressed and include Hiawatha FN's view on the status of the issue
RIA	May 9 to May 30	CNSC to incorporate feedback from Hiawatha FN, draft severity and conclusions chapters and share for review by May 9. Recommend Hiawatha FN conducts review at the working level and share initial feedback with the CNSC by May 30. CNSC staff to incorporate feedback, conduct internal reviews and discuss RIA with Hiawatha FN in June.
RIA	Mid July to Mid August	CNSC to share full RIA with Hiawatha FN. CNSC staff recommend Hiawatha FN have leadership or any other reviews and approvals completed.
Issues tracking tables	Mid July to Mid August	CNSC staff to share updated version of issues tracking table, with any new issues raised and status of issues included. Hiawatha FN to review table and include their views on the status of the issues
Update on consultation and engagement report	August	CNSC staff to provide an updated summary of the consultation and engagement conducted for Hiawatha FN to review.
RIA	Mid August to early September	CNSC to make updates based on Hiawatha FN leadership review. Discussions had as needed.
All products	September 11	RIA, issues tracker and update on consultation due – must be finalized and submitted to CNSC staff.

Please let us know if you have any questions or concerns about this approach and process and we would be happy to discuss further, thank you!

Laura DeCoste
[she, her, elle]

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From:	Gary Pritchard
To:	DeCoste, Laura
Cc:	Levine, Adam; Debbie Balika; Heidi Whetung; Relationships and Engagement;
Subject:	Re: Question about CLFN and Hiawatha FN review of CNSC DNNP documents
Sent:	2024-04-10 10:35:05 AM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Good morning Laura.

Yes we will be providing comments however our environmental Team is busy on other vacation. Once their field work is completed we will have a better understanding of the timeline for review

Gary

Get Outlook for iOS

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Wednesday, April 10, 2024 10:24:45 AM
To: Gary Pritchard <gpritchard@4directionsconservation.com>
Cc: Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>
Subject: Question about CLFN and Hiawatha FN review of CNSC DNNP documents

Hi Gary!

I just wanted to touch-base as I recently sent CLFN and Hiawatha FN a few DNNP related documents for their review and I haven't had any response yet. I have attached the relevant emails and included the dates below as an FYI:

Issues tracking table – sent on February 9th and requested feedback by March 22nd
Consultation Report and info about next steps – sent on March 27nd and requesting feedback by April 18
RIA – just sent yesterday and requesting feedback by May 3rd

These documents will be forming part of our recommendations to the Commission, should the DNNP proceed, so we are hoping to receive feedback from the Nations to ensure their views and concerns raised are accurately reflected. I am also hoping to have DNNP focused meeting in the next few months to discuss the issues, concerns and potential impacts on rights raised to date and mitigation measures being proposed by OPG and the CNSC.

Could confirm whether 4 Directions is providing any support for the review of these documents and whether a specific 4 Directions staff been assigned to supporting CLFN and Hiawatha FN? If so, would we be able to connect with them directly to discuss the documents and next steps for the DNNP?

Thank you!

Laura DeCoste
[she, her, elle]

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From:	DeCoste, Laura
To:	relationships@4directionsconservation.com
Cc:	Gary Pritchard; Tom Cowie; sdavison@hiawathafn.ca; Lee Scholl;
Subject:	FW: For Hiawatha FN review - updated CNSC consultation report and issues tracking table for the DNNP
Sent:	2024-06-19 4:05:00 PM

Hi Trisha,

Thank you for the response. Unfortunately, CNSC staff are required to have the documents finalized on June 26th so we will not be able to incorporate comments received on the documents after that time. If there are any major comments or concerns that HFN wanted to raise at our meeting tomorrow, I would be happy to incorporate that feedback into the documents.

We will be working a supplemental submission which will be posted mid-December and we can apply any relevant feedback we receive to that submission. Additionally, we remain committed to working collaboratively with HFN on the supplemental submission, including on the rights impact assessment, updated issues tracking table and conclusions on the Duty to Consult and, where appropriate, accommodate.

Please let me know if you have any questions. We can also discuss this further tomorrow!

Thank you,
Laura DeCoste
[she, her, elle]

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From: Relationships and Engagement <relationships@4directionsconservation.com>
Sent: Wednesday, June 19, 2024 1:47 PM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Cc: Gary Pritchard <gpritchard@4directionsconservation.com>; Tom Cowie <tcowie@hiawathafn.ca>; sdavison@hiawathafn.ca; Lee Scholl <lscholl@4directionsconservation.com>
Subject: Re: For Hiawatha FN review - updated CNSC consultation report and issues tracking table for the DNNP

EXTERNAL EMAIL – USE CAUTION / COURRIEL EXTERNE – FAITES PREUVE DE PRUDENCE

Sean, Tom and I have a working meeting scheduled together on June 26th to go over the documents. We won't have much else before that.

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Wednesday, June 19, 2024 11:52 AM
To: Relationships and Engagement <relationships@4directionsconservation.com>
Cc: Gary Pritchard <gpritchard@4directionsconservation.com>; Tom Cowie <tcowie@hiawathafn.ca>; sdavison@hiawathafn.ca <sdavison@hiawathafn.ca>; Lee Scholl <lscholl@4directionsconservation.com>
Subject: RE: For Hiawatha FN review - updated CNSC consultation report and issues tracking table for the DNNP

Hi Trisha,

Just checking in on the status of Hiawatha First Nation's review of the DNNP documents?

Happy to chat more at our meeting tomorrow.

Thanks,

Laura DeCoste

[she, her, elle]

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From: DeCoste, Laura
Sent: Wednesday, June 5, 2024 10:09 AM
To: relationships@4directionsconservation.com
Cc: Gary Pritchard <gpritchard@4directionsconservation.com>; Tom Cowie <tcowie@hiawathafn.ca>; sdavison@hiawathafn.ca; Lee Scholl <lscholl@4directionsconservation.com>
Subject: RE: For Hiawatha FN review - updated CNSC consultation report and issues tracking table for the DNNP

Good morning Trisha!

Thanks for providing an update on this, much appreciated. We will need to finalize the documents in the coming weeks in order to post them at the end of June. If HFN can submit any comments or feedback by June 17th at the latest, that would be great. Unfortunately, we won't have much flexibility after that.

As mentioned, there will also be an opportunity to work collaboratively on the supplemental information that CNSC staff will be submitting to the Commission in advance of the DNNP Licence to Construct hearing.

Please let me know if you have any questions or if we can support in any way.

Thank you,

Laura DeCoste

[she, her, elle]

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laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: Relationships and Engagement <relationships@4directionsconservation.com>
Sent: Tuesday, June 4, 2024 10:27 PM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Cc: Gary Pritchard <gpritchard@4directionsconservation.com>; Tom Cowie <tcowie@hiawathafn.ca>; Sean Davison <sdavison@hiawathafn.ca>; Lee Scholl <lscholl@4directionsconservation.com>
Subject: Re: For Hiawatha FN review - updated CNSC consultation report and issues tracking table for the DNNP

Aaniin Laura,

I wanted to touch base with you about these reports. I am working with HFN to set up a working meeting to review these documents. While I have reviewed the documents, I am going to require further instruction.

We will touch base again but I wanted to let you know that it hasn't fallen off the radar.

Miigwetch,

Trisha

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Friday, May 17, 2024 12:46 PM
To: sdavison@hiawathafn.ca <sdavison@hiawathafn.ca>; Relationships and Engagement <relationships@4directionsconservation.com>
Cc: Gary Pritchard <gpritchard@4directionsconservation.com>; Tom Cowie <tcowie@hiawathafn.ca>
Subject: For Hiawatha FN review - updated CNSC consultation report and issues tracking table for the DNNP

Hi all!

As discussed at our meeting yesterday, please find attached the updated DNNP consultation report and issues tracking tables for Hiawatha FN's review. Please provide any edits or feedback by June 3, 2024.

Consultation report:

- There are a few new sections in the report that Hiawatha FN will be seeing for the first time. We have used comment bubbles to indicate these sections.
- For the sections that Hiawatha FN was already sent and started reviewing, any changes made or new text is in tracked changes.
- If Hiawatha FN would like to provide feedback on CNSC's approach to consultation or OPG's engagement to date, we will include that in the report. There will also be an opportunity to include this information in the supplemental submission before the hearing. CNSC staff will be including our final recommendations regarding consultation efforts and OPG's engagement in the supplemental submission and any information received from Hiawatha FN will be considered in our assessment and reflected in the report.

Issues tracking table:

- Updated made to the issues tracking table since the last version was shared with Hiawatha FN in February are found in tracked changes. OPG has also reviewed the

table and provided input for the “proponent response” column.
- As discussed at our meeting yesterday, we understand that Hiawatha FN may only conduct an initial review of the table at this time to check for any major red flags and that a fulsome review will be done on the updated table that will be in submitted in advance of the hearing.

Please let me know if you have any questions at all.

I hope everyone has a great long weekend and the weather cooperates!

Thanks,

Laura DeCoste

[she, her, elle]

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B.5 Correspondence with Alderville First Nation

From:	DeCoste, Laura
To:	consultation@alderville.ca
Cc:	dmowat@alderville.ca
Subject:	RE: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022
Sent:	2022-06-28 9:59:00 AM

Hi Dave,

Thank you for your email. We will definitely continue to keep you informed about the DNNP licence application and process.

It would be great if we could meet so that the CNSC can better understand Alderville First Nations position. As well, it is important for us to share how you can get involve in the regulatory process and have your voices heard by the Commission.

I would be happy to provide you with some potential dates/times that would work on our end to have a discussion.

Thank you,

Laura DeCoste
[she, her, elle]

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From: Dave Simpson <consultation@alderville.ca>
Sent: June 7, 2022 3:00 PM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Cc: Dave Mowat <dmowat@alderville.ca>
Subject: RE: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022

I guess our position remains the same for this project, so please keep us posted, as you move forward on this project.
Thank you

Dave Simpson
Alderville First Nation
consultation@alderville.ca
905 375-5480

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: June 7, 2022 10:29 AM
To: Dave Simpson <consultation@alderville.ca>
Cc: Dave Mowat <dmowat@alderville.ca>
Subject: RE: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022

Hello Dave!

I am just following up on the email below to see to you would like to meet to discuss waste management, the potential Darlington New Nuclear Project licence application submission, the CNSC regulatory process, information about timelines and how you would like to be consulted moving forward.

If you are interested in meeting, I can share some potential dates/times that would work on our end.

Please let me know if you have any questions.

Thank you,
Laura DeCoste
[she, her, elle]

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From: DeCoste, Laura
Sent: May 17, 2022 8:58 AM
To: consultation@alderville.ca
Cc: dmowat@alderville.ca

Subject: RE: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022

Good morning Dave,

Thank you for your response and for providing your concerns related to spent fuel and nuclear waste.

Would Alderville First Nation be interested in meeting with the CNSC to discuss this further? We could provide information and have a discussion on waste management as well as the expected Darlington New Nuclear Project licence application.

Let me know and I would be happy to plan something!

Thank you,
Laura DeCoste
[she, her, elle]

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From: Dave Simpson <consultation@alderville.ca>
Sent: May 13, 2022 8:42 AM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Cc: Dave Mowat <dmowat@alderville.ca>
Subject: RE: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022

I would like to begin with the fact that Nuclear energy may be green but the end result is the waste eg., the spent fuel and all the low level waste material. Is there a plan on how this will be dealt with? There is no long range plan that has been put in place yet that I know of, so we are very hesitant to give approval to any licence for building another nuclear facility which will only create more waste. These are my thoughts.
Thanks

Dave Simpson
Alderville First Nation

consultation@alderville.ca
905 375-5480

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: May 13, 2022 8:24 AM
Subject: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022

Hello,

This email is to inform you that Ontario Power Generation (OPG) is expected to submit an application to the Canadian Nuclear Safety Commission (CNSC) for a licence to construct a grid-scale Small Modular Reactor (SMR) at the Darlington New Nuclear Project (DNNP) site in **Fall 2022**. OPG announced in December 2021 that they have selected the GE Hitachi BWRX-300 SMR technology.

The DNNP site is adjacent to the existing Darlington Nuclear Generating Station, located along the north shore of Lake Ontario, in the Municipality of Clarington. OPG holds a Nuclear Power Reactor Site Preparation Licence for the DNNP to 2031. An OPG-CNSC administrative protocol for the pre-construction and construction licence application is in place to allow for open and transparent processes. The protocol is available on the CNSC website located here: https://www.nuclearsafety.gc.ca/eng/pdfs/Protocols/December-2021-Protocol-Between-Ontario-Power-Generation-and-CNSC-Darlington-New-Nuclear-Project-eng.pdf

The CNSC will be offering participant funding to support involvement in the regulatory review process, including submission review, the consultation and engagement process and the Commission hearing. It is anticipated that the Commission hearing will be held by the end of 2024, however these dates have yet to be determined. More information about participant funding and the Commission hearing will be provided in the coming months.

Opportunity for early engagement:
CNSC staff are available to organize a meeting anytime to provide additional details about OPG's potential licence application submission, the regulatory process, information about timelines, answer questions, and discuss how you would like to be consulted moving forward. CNSC staff are initiating engagement prior to receiving OPG's licence application as we are committed to collaborating to develop a mutually agreeable consultation and engagement process early on in the regulatory process with you and your Nation.

Please let me know if you are interested in having this meeting or have any questions.

Thank you,
Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	DeCoste, Laura
To:	consultation@alderville.ca
Cc:	dmowat@alderville.ca
Subject:	RE: Notification of participant funding available to review documents for the Darlington New Nuclear Project
Sent:	2022-10-28 3:47:00 PM

Hi Dave!

Thank you for the response. We take your concerns very seriously. I just want to note that the Canadian Nuclear Safety Commission (CNSC) is not for or against nuclear energy, the CNSC is responsible to regulate the use of nuclear energy to protect health, safety and the environment.

We are really interested in meeting with Alderville First Nation to further discuss your concerns and provide information about how you can get involved in the regulatory process and have your voices heard directly by the Commission, who are the decision makers.

Please let me know if you are interested in meeting and I can provide some dates / times that would work on our end. You can also call me at 343-571-6491 if you have any questions or want ot discuss this further.

Thank you,
Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: Dave Simpson <consultation@alderville.ca>
Sent: October 25, 2022 10:03 AM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Cc: Dave Mowat <dmowat@alderville.ca>
Subject: RE: Notification of participant funding available to review documents for the Darlington New Nuclear Project

Thank you for the email Laura. Alderville has in the past, and are still not in favour of nuclear reactors, whether they be like the reactors in Darlington and Pickering or the SMR's that OPG are planning on building now. It seems that the outcome will be plow ahead and all the meetings and comments might better be thrown along the path that you are taking. If we were to get on board with any project, I think we could spend some valuable time in looking at an alternative to nuclear , I understand that it is a clean source of energy but after all the years that nuclear has been here as a source of energy there is still no plan on how to store the waste that remains after the fuel bundles are no long useful in creating energy.
That is my personal feeling and it doesn't seem to be a message that is being heard by the powers that be.

Dave Simpson
Alderville First Nation
consultation@alderville.ca
905 375-5480

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: October 25, 2022 7:09 AM
Subject: Notification of participant funding available to review documents for the Darlington New Nuclear Project

Hello!

Ontario Power Generation (OPG) is proposing to construct a small modular reactor as early as 2028 in the Municipality of Clarington, Ontario. OPG currently holds a site preparation licence for the project and intends to submit an application this month to the CNSC for a licence to construct.

Funding is available to assist Indigenous Nations and communities, members of the public and stakeholders in reviewing 2 OPG documents related to the Darlington New Nuclear Project:

- Use of Plant Parameters Envelope to Encompass the Reactor Designs Being Considered for the Darlington Site
- Darlington New Nuclear Project Environmental Impact Statement Review Report for Small Modular Reactor BWRX-300

Funding is also intended to support the participation in workshops and/or meetings with CNSC staff regarding OPG's Darlington New Nuclear Project and the submission of comments to the CNSC. **The deadline to submit a completed participant funding application is December 2, 2022.**

A second stage of funding, to be announced at a later date, will assist with participation in the remainder of the regulatory process, including the review of Commission member documents and documents related to OPG's application for a licence to construct, and participation at the Commission hearing. For more information on the Participant Funding Program, go to

http://www.nuclearsafety.gc.ca/eng/the-commission/participant-funding-program/opportunities/index.cfm

Please let me know if you have any questions or wish to discuss this further.

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	Eaton, Sarah
To:	consultation@alderville.ca; dmowat@alderville.ca; Darlington New Nuclear Project / Nouveau projet nucleaire de Darlington; DeCoste, Laura;
Subject:	Re: CNSC Notice of OPG Application for a Licence to Construct a Reactor Facility for the Darlington New Nuclear Project
Sent:	2022-11-30 1:36:28 PM

Hello!

Thank you so much for your question. My apologies that it took me a few days to respond. I had a sick toddler.

Here is our answer to your question on fuel bundles.

As part of Ontario Power Generation's (OPG) application for a Licence to Construct, OPG must develop and submit a radioactive waste management plan. The intent of this plan is to provide an acceptable strategy for the storage of High, Intermediate and Low-level wastes. This includes the management of spent fuel. OPG will provide this before March 31, 2023 and CNSC staff will review this plan and determine whether it meets the regulatory requirements for the safe management of radioactive waste. I know you are interested in seeing a plan on paper. We can certainly work with OPG to be able to give you that once we have their plan.

OPG's application will also include a revision to the Darlington New Nuclear site's decommissioning plan to reflect the construction of the small modular reactor. This Preliminary Decommissioning Plan will be required to demonstrate a credible plan for the future management and eventual disposal of all radioactive wastes produced and stored at the Darlington New Nuclear site at the end of its operational life. CNSC staff will review this decommissioning plan and determine whether it meets the regulatory requirements for decommissioning of nuclear power plants.

As you may know, the ultimate decision makers at the CNSC are our independent Commission. The Commission will review OPGs plans as well as the conclusions and recommendations provided by CNSC staff. The Commission will determine the acceptability of OPG's plans.

We would love an opportunity to meet to discuss any concerns you have about fuel, waste management or this project in general. Please don't hesitate to get in touch. My phone number is 343-548-2828.

Thanks!
Sarah

Sarah Jane Eaton, P. Geo (she/elle)
Director/Directrice
Advanced Reactor Licensing Division / Division de l'autorisation des réacteurs avancés

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire
Sarah.eaton@cnsc-ccsn.gc.ca | Mobile: 343-548-2828

From: Dave Simpson <consultation@alderville.ca>
Sent: November 24, 2022 10:41 AM
To: Cunningham, Amy <amy.cunningham@cnsc-ccsn.gc.ca>
Cc: Dave Mowat <dmowat@alderville.ca>
Subject: RE: CNSC Notice of OPG Application for a Licence to Construct a Reactor Facility for the Darlington New Nuclear Project

Thank you for the email regarding the SMR to be built at the Darlington site. The Chief at Alderville and me as well would like to see a plan on paper how the hot fuel bundles will be stored and kept in a safe place away from the possibility of contamination
to the general public. Until such a time that you can provide us with a good sound plan for storage of the spent fuel, we can't in good conscious support that work.

Dave Simpson
Alderville First Nation
consultation@alderville.ca
905 375-5480

From: Cunningham, Amy <amy.cunningham@cnsc-ccsn.gc.ca>
Sent: November 23, 2022 3:42 PM
To: Dave Mowat <dmowat@alderville.ca>
Cc: Dave Simpson <consultation@alderville.ca>; Eaton, Sarah <Sarah.Eaton@cnsc-ccsn.gc.ca>; Rzentkowski, Bartek <bartek.rzentkowski@cnsc-ccsn.gc.ca>; Simon, Nicole <Nicole.Simon@cnsc-ccsn.gc.ca>; Janzen, Emily <emily.janzen@cnsc-ccsn.gc.ca>; Harpell, Heather <Heather.Harpell@cnsc-ccsn.gc.ca>; Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; Zenobi, Adam <adam.zenobi@cnsc-ccsn.gc.ca>; DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>; Ducros, Caroline <Caroline.Ducros@cnsc-ccsn.gc.ca>; Jammal, Ramzi <Ramzi.Jammal@cnsc-ccsn.gc.ca>
Subject: CNSC Notice of OPG Application for a Licence to Construct a Reactor Facility for the Darlington New Nuclear Project

Good afternoon,

Please find the attached letter of correspondence which is of interest to Chief Dave Mowat.

This email will serve as confirmation of notification for this correspondence. In an effort to shrink our environmental footprint, CNSC will not be mailing a hard copy of this letter.

Please send your questions regarding this letter to the Director of Advanced Reactor Licensing Division: Sarah Eaton Sarah.Eaton@cnsc-ccsn.gc.ca.

Kindly,

Amy Cunningham
Administrative Assistant / Adjointe Administrative
Advanced Reactor Licensing Division / Division de l'autorisation des réacteurs avancés
Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire
amy.cunningham@cnsc-ccsn.gc.ca

From:	Martin, Marina
To:	Julie Kapyrka
Cc:	DeCoste, Laura
Subject:	RE: IEMP Notification for 2024 Sampling Campaigns
Sent:	2024-04-19 3:20:58 PM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Julie,

I'm just following up to see whether you were able to find a liaison to attend the IEMP sampling campaign this May. Our IEMP team would welcome participation from Alderville First Nation on Tuesday, May 28th.

Additionally, please let us know if you would be interested in meeting with CNSC staff to discuss the regulation of any projects of interest to you, such as Commission proceedings regarding OPG's Darlington New Nuclear Project.

Finally, we would like to bring to your attention the 2024 re-opening of our Indigenous and Stakeholder Capacity Fund Stream 1 opportunity. Stream 1, the Indigenous Capacity Support stream, funds long-term activities to increase capacity of Indigenous Nations and communities with a direct interest in nuclear facilities, nuclear projects, and nuclear technologies. Please let us know if you have any questions or want any assistance filling out an application.

Thanks so much, talk soon.

Marina Martin
she/her

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission – Government of Canada
Marina.Martin@cnsc-ccsn.gc.ca

From: Julie Kapyrka <jkapyrka@alderville.ca>
Sent: Thursday, April 4, 2024 1:44 PM
To: Martin, Marina <marina.martin@cnsc-ccsn.gc.ca>
Cc: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Subject: RE: IEMP Notification for 2024 Sampling Campaigns

Aaniin Marina,

B.6 Correspondence with the Chippewas of Georgina Island First Nation

From:	DeCoste, Laura
To:	jl.porte@georginaisland.com
Subject:	Follow up to phone call regarding the Darlington New Nuclear Project – Application Expected in Fall 2022
Sent:	2022-06-20 10:34:00 PM

Hi JL!

Thank you for taking my call on June 8, 2022 regarding the opportunity to meet with CNSC staff to discuss the Darlington New Nuclear Project (DNNP). During the call you confirmed that at this time it is your preference to receive information about the DNNP application via email. As discussed, Ontario Power Generation is expected to submit a licence application to the Canadian Nuclear Safety Commission to construct a grid-scale Small Modular Reactor (SMR) at the DNNP site this fall. Please find additional information about the DNNP site below.

The DNNP site is adjacent to the existing Darlington Nuclear Generating Station, located along the north shore of Lake Ontario, in the Municipality of Clarington. OPG holds a Nuclear Power Reactor Site Preparation Licence for the DNNP which expires in 2031. The CNSC and OPG have agreed to an administrative protocol for the pre-construction phase and the construction licence application. The protocol is available on the CNSC website located here: https://www.nuclearsafety.gc.ca/eng/pdfs/Protocols/December-2021-Protocol-Between-Ontario-Power-Generation-and-CNSC-Darlington-New-Nuclear-Project-eng.pdf. The GE Hitachi technology is sized to generate 300 megawatts using boiler water technology. This design is currently undergoing a Vendor Design Review which is a CNSC pre-licensing activity (https://nuclearsafety.gc.ca/eng/reactors/power-plants/pre-licensing-vendor-design-review/index.cfm).

In 2009 there was an Environmental Assessment (EA) for the DNNP, which included four reactor technologies that OPG was considering at that time. The results were documented in the OPG Environmental Impact Statement (EIS) report. One outcome of the EA process was a requirement for OPG to demonstrate how the selected technology (BWRX-300) fits within the expected effects as described in the EA. In particular, OPG will have to identify any changes and assess them against the potential for significant adverse environmental effects for the selected BWRX-300 technology.
The CNSC licensing process begins with the submission of an application. CNSC staff review each licence application in the context of the *Nuclear Safety and Control Act* and the relevant regulations that apply to the activities in the application. During the licensing process, there is ongoing engagement with the public and Indigenous Nations and communities. Following months of review, CNSC staff provide a Commission Member Document with the results of its review and recommendations to the Commission. This also includes CNSC staff assessment as to whether the applicant is qualified to carry on the proposed activities and in a safe manner that protects the public, Indigenous Nations and communities and the environment.

The OPG-CNSC administrative protocol describes OPG's request for a review time of 24 months. This timeline includes the application review, preparation of the Commission Member Document and the hearing process. CNSC staff would like to stress that the review period is based on the assumption that OPG's application is sufficiently complete and detailed to ensure CNSC staff have the information required to allow the regulatory assessment and licensing process to proceed efficiently. CNSC staff will not compromise on the level of effort required to ensure a thorough technical review and will not compromise on review timelines for the public and Indigenous Nations and communities.

CNSC staff will continue to provide regular updates through emails, updates to our website (https://www.nuclearsafety.gc.ca) and are available for meetings both in person and virtually. The CNSC will be providing Participant Funding for this project. Information on how to apply for funding will be provided in the upcoming months.

Please don't hesitate to reach out to me any time if you are interested in having a meeting on this topic or if you have any questions.

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: DeCoste, Laura
Sent: May 13, 2022 8:24 AM
Subject: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022

Hello,

This email is to inform you that Ontario Power Generation (OPG) is expected to submit an application to the Canadian Nuclear Safety Commission (CNSC) for a licence to construct a grid-scale Small Modular Reactor (SMR) at the Darlington New Nuclear Project (DNNP) site in **Fall 2022**. OPG announced in December 2021 that they have selected the GE Hitachi BWRX-300 SMR technology.

The DNNP site is adjacent to the existing Darlington Nuclear Generating Station, located along the north shore of Lake Ontario, in the Municipality of Clarington. OPG holds a Nuclear Power Reactor Site Preparation Licence for the DNNP to 2031. An OPG-CNSC administrative protocol for the pre-

construction and construction licence application is in place to allow for open and transparent processes. The protocol is available on the CNSC website located here: https://www.nuclearsafety.gc.ca/eng/pdfs/Protocols/December-2021-Protocol-Between-Ontario-Power-Generation-and-CNSC-Darlington-New-Nuclear-Project-eng.pdf

The CNSC will be offering participant funding to support involvement in the regulatory review process, including submission review, the consultation and engagement process and the Commission hearing. It is anticipated that the Commission hearing will be held by the end of 2024, however these dates have yet to be determined. More information about participant funding and the Commission hearing will be provided in the coming months.

Opportunity for early engagement:

CNSC staff are available to organize a meeting anytime to provide additional details about OPG's potential licence application submission, the regulatory process, information about timelines, answer questions, and discuss how you would like to be consulted moving forward. CNSC staff are initiating engagement prior to receiving OPG's licence application as we are committed to collaborating to develop a mutually agreeable consultation and engagement process early on in the regulatory process with you and your Nation.

Please let me know if you are interested in having this meeting or have any questions.

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	DeCoste, Laura
To:	Natasha Charles
Subject:	RE: Funding opportunities for Darlington New Nuclear Project and meeting with the Canadian Nuclear Safety Commission
Sent:	2024-01-03 4:19:00 PM

Hi Natasha!

Sounds great, thanks for the update.

For next week, I am available at the follow times:

- Wednesday January 10th between 10:00 – 11:00am or 2:00 to 3:00pm
- Thursday January 11th between 10:30 am – noon
- Friday January 12 between 11:00am to noon

Let me know if MS teams would work on your end 😊

Thank you!
Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Intérimaire Agente principale des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: Natasha Charles <natasha.charles@georginaisland.com>
Sent: Wednesday, January 3, 2024 2:03 PM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Subject: Re: Funding opportunities for Darlington New Nuclear Project and meeting with the Canadian Nuclear Safety Commission

Good afternoon Laura!

Yes I do plan on submitting that ASAP! I've been working on the application when I've had the time and I know it's extremely late! I'll have it to you by the end of the week forsure. There was

some confusion with what funding I was to be applying for as well as some personal things.

As for a call, the office opens back up on Monday and I'm free all next week for a call if you want to send over your availability I'd be more than happy to work out a time with you!

Thank you so much for your patience,

Natasha Charles,
Community Consultation
Chippewas of Georgina Island First Nation

Sent from my iPhone

> On Jan 3, 2024, at 9:25 AM, DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca> wrote:
>
> > You don't often get email from laura.decoste@cnsc-ccsn.gc.ca. Learn why this is important
>
> Hi Natasha!
>
> I hope you had a restful and happy holidays 😊 I tried to call you leading up the break but unfortunately we were not able to connect.
>
> I just wanted to touch-base on if you are still planning to submit funding applications to support the CGIFN's participation in the regulatory process for the Darlington New Nuclear Project?
>
> I am also reaching to see whether CGIFN would be interested in meeting with the CNSC to discuss:
>
> 1. the CNSCs role, mandate and approach to regulating nuclear energy
> 2. the CNSC's approach to consultation and engagement and opportunities for CGIFN to be involved
> 3. information and update on the Darlington New Nuclear Project, regulatory process to date and upcoming hearing
>
> If so, I would be happy to share a few dates/times that work on our end. Please let me know if you have any questions about this!
>
> Thank you,
> **Laura DeCoste**
> [she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Intérimaire Agente principale des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	DeCoste, Laura
To:	Natasha Charles
Cc:	Zenobi, Adam
Subject:	Follow up on meeting with the CNSC and the hearing for the Darlington New Nuclear Project
Sent:	2024-02-02 2:06:00 PM

Follow Up Flag:	Follow up
Flag Status:	Completed

Hi Natasha!

I hope you are doing well. I just wanted to touch-base with you and see whether you were able to attend or watch the DNNP hearing that happened January 23- 25th and whether you had any questions or comments?

We would be happy to set up a meeting to talk more about the DNNP, potential next steps in the regulatory process, opportunities for CGIFN to be involved and any questions, comments or concerns you may have. As mentioned below, I can also set up the quarterly meetings that we talked about when we met on January 11th.

Thank you,

Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Intérimaire Agente principale des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: DeCoste, Laura
Sent: Thursday, January 11, 2024 5:15 PM
To: Natasha Charles <natasha.charles@georginaisland.com>
Subject: Follow up from todays meeting between CNSC staff and CGIFN

Hi Natasha,

Thanks again for meeting with me today – it was nice to chat with you! I can send out an invite for

quarterly meetings where we can provide updates and discuss any topics of interest or concern. Is there a certain day of the week or time that works best for you?

As mentioned, please find attached a presentation that provides information about the CNSC and the facilities in the CGIFN's territory. I've also attached a summary of the CNSC's analysis and recommendations related to the DNNP hearing where the Commission will make a decision on whether the environmental assessment is applicable to the technology that Ontario Power Generation has chosen.

Hearing details:
Date: January 23, 24 and 25, 2024
Place: Ajax Convention Centre, 550 Beck Crescent, Ajax, Ontario. If you wish to watch the hearing live, it will be broadcasted and a link will be available here at the time of the proceeding: Watch a public Commission proceeding online - Canadian Nuclear Safety Commission (cnsc-ccsn.gc.ca)
Time: 9 am EST on January 23, 24 and 25
Agenda: Agenda for January 23-25, 2024 Public Hearing - Ref. CMD 24-H1 (nuclearsafety.gc.ca)

Information about the CNSC's capacity funding program can be found here: Indigenous and Stakeholder Capacity Fund (cnsc-ccsn.gc.ca). As mentioned, Stream one (which can provide funding for Staffing and internal resource support) is expected to open in the Spring!

Let me know if you have any questions!

Thank you,
Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Intérimaire Agente principale des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	Dormer, Natalie
To:	Natasha Charles
Cc:	DeCoste, Laura
Subject:	Canadian Nuclear Safety Commission - Darlington New Nuclear Project and other items of interest
Sent:	2024-03-06 10:44:00 AM

Hello!

My name is Natalie and I work for the Canadian Nuclear Safety Commission, Canada's Nuclear Regulator.

I tried calling but the administrative assistant I reached at the Georgina Island First Nation office mentioned this would be the best way for us to connect. I'm reaching out as the CNSC is currently conducting a regulatory process for the Darlington New Nuclear Project (DNNP), a Small Modular Reactor proposed by Ontario Power Generation to be located in the Municipality of Clarington Ontario. CNSC staff are available to meet to discuss this proposed project and answer any questions you may have. I understand you've had previous discussions with Laura DeCoste regarding setting up a quarterly meeting, I would be happy to help you arrange those!

Please let me know if you are interested in learning more about the CNSC, the existing facilities in your community's territory, the DNNP and opportunities to be involved and consulted, and the funding opportunities available to Indigenous Nations and communities. I would be happy to set up a meeting to discuss any of these or other topics of interest.

Please also feel free to call me if you have any questions!

Thank you,
Natalie

Natalie Dormer (she/her/elle)

Policy Officer
Indigenous and Stakeholeder Relations Division (ISRD)
Canadian Nuclear Safety Commission
natalie.dormer@cnsc-ccsn.gc.ca / Cell : 343-540-7411

Agente en politiques
Division des relations avec les Autochtones et les parties intérssées
Commission canadienne de sûreté nucléaire
natalie.dormer@cnsc-ccsn.gc.ca / Cell : 343-540-7411

B.7 Correspondence with the Chippewas of Rama First Nation

From:	DeCoste, Laura
To:	shardayj@ramafirstnation.ca
Subject:	FW: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022
Sent:	2022-06-02 1:02:00 PM

Hi Sharday!

Thanks for talking to me today. As discussed, I am following up to start organizing a meeting between the Chippewas of Rama First Nation and Canadian Nuclear Safety Commission (CNSC) staff on the Darlington New Nuclear Project. CNSC staff can discuss details about OPG's potential licence application submission, the regulatory process, information about timelines, answer questions, and discuss how you would like to be consulted moving forward.

Here are some potential dates / times:

- Friday, June 24 at 11 am to noon
- Monday June 27 at 11 am – noon
- Wednesday, June 29 at 3 pm – 4pm
- Tuesday July 26 at 1 pm – 2pm

Let me know if any of those options would work on your end. Also, would meeting over MS Teams works for you? If so, once we determine a date / time, I can send out an invite.

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: DeCoste, Laura
Sent: May 13, 2022 8:24 AM
Subject: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022

Hello,

This email is to inform you that Ontario Power Generation (OPG) is expected to submit an application to the Canadian Nuclear Safety Commission (CNSC) for a licence to construct a grid-scale Small Modular Reactor (SMR) at the Darlington New Nuclear Project (DNNP) site in **Fall 2022**. OPG announced in December 2021 that they have selected the GE Hitachi BWRX-300 SMR technology.

The DNNP site is adjacent to the existing Darlington Nuclear Generating Station, located along the north shore of Lake Ontario, in the Municipality of Clarington. OPG holds a Nuclear Power Reactor Site Preparation Licence for the DNNP to 2031. An OPG-CNSC administrative protocol for the pre-construction and construction licence application is in place to allow for open and transparent processes. The protocol is available on the CNSC website located here: https://www.nuclearsafety.gc.ca/eng/pdfs/Protocols/December-2021-Protocol-Between-Ontario-Power-Generation-and-CNSC-Darlington-New-Nuclear-Project-eng.pdf

The CNSC will be offering participant funding to support involvement in the regulatory review process, including submission review, the consultation and engagement process and the Commission hearing. It is anticipated that the Commission hearing will be held by the end of 2024, however these dates have yet to be determined. More information about participant funding and the Commission hearing will be provided in the coming months.

Opportunity for early engagement:

CNSC staff are available to organize a meeting anytime to provide additional details about OPG's potential licence application submission, the regulatory process, information about timelines, answer questions, and discuss how you would like to be consulted moving forward. CNSC staff are initiating engagement prior to receiving OPG's licence application as we are committed to collaborating to develop a mutually agreeable consultation and engagement process early on in the regulatory process with you and your Nation.

Please let me know if you are interested in having this meeting or have any questions.

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	DeCoste, Laura
To:	shardayj@ramafirstnation.ca
Subject:	Potential meeting with CNSC regarding Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022
Sent:	2022-06-17 8:55:00 AM

Follow Up Flag:	Follow up
Flag Status:	Completed

Hello Sharday!

I am just following up on the email below to see if you are still interested in having a virtual meeting / discussion about the Darlington New Nuclear Project?

If so, let me know if any of the dates below work on your end or if you would like me to proposed additional dates.

Feel free to give me a call if you have any questions!

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: DeCoste, Laura
Sent: June 2, 2022 1:02 PM
To: shardayj@ramafirstnation.ca
Subject: FW: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022

Hi Sharday!

Thanks for talking to me today. As discussed, I am following up to start organizing a meeting between the Chippewas of Rama First Nation and Canadian Nuclear Safety Commission (CNSC) staff on the Darlington New Nuclear Project. CNSC staff can discuss details about OPG's potential licence application submission, the regulatory process, information about timelines, answer questions, and discuss how you would like to be consulted moving forward.

Here are some potential dates / times:

- Friday, June 24 at 11 am to noon
- Monday June 27 at 11 am – noon
- Wednesday, June 29 at 3 pm – 4pm
- Tuesday July 26 at 1 pm – 2pm

Let me know if any of those options would work on your end. Also, would meeting over MS Teams works for you? If so, once we determine a date / time, I can send out an invite.

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: DeCoste, Laura
Sent: May 13, 2022 8:24 AM
Subject: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022

Hello,

This email is to inform you that Ontario Power Generation (OPG) is expected to submit an application to the Canadian Nuclear Safety Commission (CNSC) for a licence to construct a grid-scale Small Modular Reactor (SMR) at the Darlington New Nuclear Project (DNNP) site in **Fall 2022**. OPG announced in December 2021 that they have selected the GE Hitachi BWRX-300 SMR technology.

The DNNP site is adjacent to the existing Darlington Nuclear Generating Station, located along the north shore of Lake Ontario, in the Municipality of Clarington. OPG holds a Nuclear Power Reactor Site Preparation Licence for the DNNP to 2031. An OPG-CNSC administrative protocol for the pre-construction and construction licence application is in place to allow for open and transparent processes. The protocol is available on the CNSC website located here: https://www.nuclearsafety.gc.ca/eng/pdfs/Protocols/December-2021-Protocol-Between-Ontario-Power-Generation-and-CNSC-Darlington-New-Nuclear-Project-eng.pdf

The CNSC will be offering participant funding to support involvement in the regulatory review process, including submission review, the consultation and engagement process and the Commission hearing. It is anticipated that the Commission hearing will be held by the end of 2024, however these dates have yet to be determined. More information about participant funding and the Commission hearing will be provided in the coming months.

Opportunity for early engagement:

CNSC staff are available to organize a meeting anytime to provide additional details about OPG's potential licence application submission, the regulatory process, information about timelines, answer questions, and discuss how you would like to be consulted moving forward. CNSC staff are initiating engagement prior to receiving OPG's licence application as we are committed to collaborating to develop a mutually agreeable consultation and engagement process early on in the regulatory process with you and your Nation.

Please let me know if you are interested in having this meeting or have any questions.

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	DeCoste, Laura
To:	benb@ramafirstnation.ca; consultation@ramafirstnation.ca;
Subject:	Follow up from phone call today with the CNSC
Sent:	2023-10-26 10:54:00 AM

Hi Ben!

It was nice chatting with you today, as mentioned I am following up from the phone call so that you have my contact information. As discussed, the Canadian Nuclear Safety Commission is the federal regulator of nuclear energy and facilities. We are currently going through a regulatory process for the Darlington New Nuclear Project, a small modular reactor proposed by Ontario Power Generation to be located within the Williams Treaties territory, near Oshawa Ontario at OPG's existing Darlington nuclear site. I'm reaching out to see whether Rama First Nation is interested in learning more about the CNSC, the regulatory process for the DNNP and opportunities to get involved in the process.

Additionally, the CNSC is also hosting a virtual public webinar on the DNNP on **October 31st from 11:00 am to 12:30 pm** which will provide an update on the regulatory review and public hearings for the Darlington New Nuclear Project. If you are interested in attending, **please register here:** https://us06web.zoom.us/webinar/register/WN_81Er7rSxQb6uNJCVCMEWqQ.

Once you have had a chance to talk with Karry Sandy McKenzie please let me know if you would like to set up a meeting to discuss this further.

Thank you!
Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	Dormer, Natalie
To:	consultation@ramafirstnation.ca
Cc:	DeCoste, Laura
Subject:	Canadian Nuclear Safety Commission - Touchbase regarding consultation liaison and the Darlington New Nuclear Project
Sent:	2024-03-06 11:00:55 AM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hello,

I am writing as a follow up to a message I've left for Ben Cousineau. My name is Natalie and I work for the Canadian Nuclear Safety Commission, Canada's Nuclear Regulator. The CNSC is responsible for the oversight, regulation and licensing of all nuclear activities in Canada to protect health, safety, security and the environment. We are also committed to building relationships with Indigenous Nations and communities and conducting consultation on project where there is a potential for impacts to Indigenous and/or Treaty rights.

I've reach out for a few reasons:

1. I am looking to get updated contact information on Rama First Nation's Community Consultation Coordinator as the last contact we had is no longer with the office, and
2. I'm reaching out as the CNSC is currently conducting a regulatory process for the Darlington New Nuclear Project (DNNP), a Small Modular Reactor proposed by Ontario Power Generation to be located in the Municipality of Clarington Ontario. CNSC staff are available to meet to discuss this proposed project and answer any questions you may have.

Please let me know if you have hired a new consultation liaison, and if you are interested in learning more about the CNSC, the existing facilities in your community's territory, the DNNP and opportunities to be involved and consulted. I would be happy to set up a meeting to discuss any of these or other topics of interest.

Please also feel free to call me if you have any questions!

Thank you,
Natalie

Natalie Dormer (she/her/elle)

Policy Officer
Indigenous and Stakeholeder Relations Division (ISRD)
Canadian Nuclear Safety Commission
natalie.dormer@cnsc-ccsn.gc.ca / Cell : 343-540-7411

Agente en politiques
Division des relations avec les Autochtones et les parties intérssées
Commission canadienne de sûreté nucléaire
natalie.dormer@cnsc-ccsn.gc.ca / Cell : 343-540-7411

B.8 Correspondence with the Chippewas of Beausoleil First Nation

From:	DeCoste, Laura
To:	consultation@chimnissing.ca
Subject:	Follow up to phone call - meeting with CNSC regarding the Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022
Sent:	2022-06-02 1:35:00 PM

Hi Susan,

Thanks for talking to me today. As discussed, I am following up to start organizing a meeting between Beausoleil First Nation and Canadian Nuclear Safety Commission (CNSC) staff on the Darlington New Nuclear Project. CNSC staff can discuss details about OPG's potential licence application submission, the regulatory process, information about timelines, and discuss how you would like to be consulted moving forward.

Here are some potential dates / times:

- Friday, June 24 at 11 am to noon
- Monday June 27 at 11 am – noon
- Wednesday, June 29 at 3 pm – 4pm
- Tuesday July 26 at 1 pm – 2pm

Let me know if any of those options would work on your end. As mentioned, we can do the meeting over MS Teams and once we determine a date / time, I can send out an invite.

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: DeCoste, Laura
Sent: May 13, 2022 8:24 AM
Subject: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022

Hello,

This email is to inform you that Ontario Power Generation (OPG) is expected to submit an application to the Canadian Nuclear Safety Commission (CNSC) for a licence to construct a grid-scale Small Modular Reactor (SMR) at the Darlington New Nuclear Project (DNNP) site in **Fall 2022**. OPG announced in December 2021 that they have selected the GE Hitachi BWRX-300 SMR technology.

The DNNP site is adjacent to the existing Darlington Nuclear Generating Station, located along the north shore of Lake Ontario, in the Municipality of Clarington. OPG holds a Nuclear Power Reactor Site Preparation Licence for the DNNP to 2031. An OPG-CNSC administrative protocol for the pre-construction and construction licence application is in place to allow for open and transparent processes. The protocol is available on the CNSC website located here: https://www.nuclearsafety.gc.ca/eng/pdfs/Protocols/December-2021-Protocol-Between-Ontario-Power-Generation-and-CNSC-Darlington-New-Nuclear-Project-eng.pdf

The CNSC will be offering participant funding to support involvement in the regulatory review process, including submission review, the consultation and engagement process and the Commission hearing. It is anticipated that the Commission hearing will be held by the end of 2024, however these dates have yet to be determined. More information about participant funding and the Commission hearing will be provided in the coming months.

Opportunity for early engagement:

CNSC staff are available to organize a meeting anytime to provide additional details about OPG's potential licence application submission, the regulatory process, information about timelines, answer questions, and discuss how you would like to be consulted moving forward. CNSC staff are initiating engagement prior to receiving OPG's licence application as we are committed to collaborating to develop a mutually agreeable consultation and engagement process early on in the regulatory process with you and your Nation.

Please let me know if you are interested in having this meeting or have any questions.

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	DeCoste, Laura
To:	'consultations@chimnissing.ca'
Subject:	Follow up to phone call - meeting with CNSC regarding the Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022
Sent:	2022-07-04 10:43:00 AM

Follow Up Flag:	Follow up
Flag Status:	Completed

Hi Susan!

I hope you are doing well. We talked on the phone in early June about setting up a virtual meeting / discussion about the Darlington New Nuclear Project. I sent some follow up emails regarding this, however I just noticed that I got your email address wrong (forgot the “s”). I apologize for this!

CNSC staff can discuss details about OPG’s potential licence application submission, the regulatory process, information about timelines, and how you would like to be consulted moving forward. If you are still interested in meeting on this topic, here are some dates that could work on our end:

- Thursday July 28 at 11 am – noon
- Tuesday August 9 at 11 am – noon
- Thursday August 11 anytime between 10:30 – noon

If these dates do not work, please feel free to propose other times in August or early September that would work for you.

Thank you,
Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: DeCoste, Laura
Sent: June 17, 2022 8:55 AM
To: consultation@chimnissing.ca
Subject: RE: Follow up to phone call - meeting with CNSC regarding the Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022

Hello Susan,

I am just following up on the email below to see if you are still interested in having a virtual meeting / discussion about the Darlington New Nuclear Project?

If so, let me know if any of the dates below work on your end or if you would like me to proposed additional dates.

Feel free to give me a call if you have any questions!

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: DeCoste, Laura
Sent: June 2, 2022 1:36 PM
To: consultation@chimnissing.ca
Subject: Follow up to phone call - meeting with CNSC regarding the Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022

Hi Susan,

Thanks for talking to me today. As discussed, I am following up to start organizing a meeting between Beausoleil First Nation and Canadian Nuclear Safety Commission (CNSC) staff on the Darlington New Nuclear Project. CNSC staff can discuss details about OPG's potential licence application submission, the regulatory process, information about timelines, and discuss how you would like to be consulted moving forward.

Here are some potential dates / times:

- Friday, June 24 at 11 am to noon
- Monday June 27 at 11 am – noon
- Wednesday, June 29 at 3 pm – 4pm
- Tuesday July 26 at 1 pm – 2pm

Let me know if any of those options would work on your end. As mentioned, we can do the meeting over MS Teams and once we determine a date / time, I can send out an invite.

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: DeCoste, Laura
Sent: May 13, 2022 8:24 AM
Subject: Advance notice of Darlington New Nuclear Project Licence to Construct – Application Expected in Fall 2022

Hello,

This email is to inform you that Ontario Power Generation (OPG) is expected to submit an application to the Canadian Nuclear Safety Commission (CNSC) for a licence to construct a grid-scale Small Modular Reactor (SMR) at the Darlington New Nuclear Project (DNNP) site in **Fall 2022**. OPG announced in December 2021 that they have selected the GE Hitachi BWRX-300 SMR technology.

The DNNP site is adjacent to the existing Darlington Nuclear Generating Station, located along the north shore of Lake Ontario, in the Municipality of Clarington. OPG holds a Nuclear Power Reactor Site Preparation Licence for the DNNP to 2031. An OPG-CNSC administrative protocol for the pre-construction and construction licence application is in place to allow for open and transparent processes. The protocol is available on the CNSC website located here: https://www.nuclearsafety.gc.ca/eng/pdfs/Protocols/December-2021-Protocol-Between-Ontario-Power-Generation-and-CNSC-Darlington-New-Nuclear-Project-eng.pdf

The CNSC will be offering participant funding to support involvement in the regulatory review process, including submission review, the consultation and engagement process and the Commission hearing. It is anticipated that the Commission hearing will be held by the end of 2024, however these dates have yet to be determined. More information about participant funding and the Commission hearing will be provided in the coming months.

Opportunity for early engagement:
CNSC staff are available to organize a meeting anytime to provide additional details about OPG's potential licence application submission, the regulatory process, information about timelines, answer questions, and discuss how you would like to be consulted moving forward. CNSC staff are initiating engagement prior to receiving OPG's licence application as we are committed to

collaborating to develop a mutually agreeable consultation and engagement process early on in the regulatory process with you and your Nation.

Please let me know if you are interested in having this meeting or have any questions.

Thank you,
Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Agente des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	DeCoste, Laura
To:	Lua - Consultation Liason (BFN)
Subject:	RE: Consultation Meeting - CNSC and Beausoleil First Nation
Sent:	2024-04-18 11:28:00 AM

Perfect! I will send out a MS teams invite now.

Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Intérimaire Agente principale des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: Lua - Consultation Liason (BFN) <bfnconsultation@chimnissing.ca>
Sent: Thursday, April 18, 2024 11:06 AM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Subject: Re: Consultation Meeting - CNSC and Beausoleil First Nation

Thank you so much for your quick response.

Thursday, May second would be great.

On Thu, Apr 18, 2024 at 11:02 AM DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca> wrote:

> Hi Lua!
>
> Let me know whether any of the following times work on your end:
>
> - Thursday May 2nd from 2pm to 3pm
> - Monday May 6th from 2:30 to 3:30
> - Thursday May 9th from 9:30 to 10:30

Thank you,
Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Intérimaire Agente principale des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: Dormer, Natalie <natalie.dormer@cnsc-ccsn.gc.ca>
Sent: Thursday, April 18, 2024 9:24 AM
To: Lua - Consultation Liason (BFN) <bfnconsultation@chimnissing.ca>
Cc: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>; McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>; Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>
Subject: Re: Consultation Meeting - CNSC and Beausoleil First Nation

Hello,

Thanks for the quick response! I've cc'd Laura in this email who will be able to help coordinate a meeting time with you.

We look forward to chatting with you.

Best,
Natalie

From: Lua - Consultation Liason (BFN) <bfnconsultation@chimnissing.ca>
Sent: Thursday, April 18, 2024 09:20
To: Dormer, Natalie <natalie.dormer@cnsc-ccsn.gc.ca>
Subject: Re: Consultation Meeting - CNSC and Beausoleil First Nation

Good morning Natalie,

So sorry for not reaching out earlier! Do you have any availability in early May?

On Thu, Apr 18, 2024 at 9:09 AM Dormer, Natalie <natalie.dormer@cnsc-ccsn.gc.ca> wrote:

Hello,

I am looking to follow up on the conversation we had on March 6th about furthering Beausoleil First Nation's learning on the Independent Environmental Monitoring Program among other topics of interest. Please let us know if you are still interested in having a discussion on the topics listed below, or if you would like us to touch base again at a later date.

Items of discussion:

- Continued learning on the Independent Environmental Monitoring Program (IEMP)
- Issues/concerns regarding the Darlington New Nuclear Project (DNNP) and other projects in the area
- The CNSC funding programs, what they are and how they can help

Best,

Natalie

From: Dormer, Natalie
Sent: Thursday, March 7, 2024 07:38
To: bfnconsultation@chimnissing.ca <bfnconsultation@chimnissing.ca>
Cc: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>; McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>; Levine, Adam <adam.levine@cnsc-ccsn.gc.ca>
Subject: Consultation Meeting - CNSC and Beausoleil First Nation

Good morning and thank you so much for chatting with me yesterday!

We discussed booking a meeting between the Canadian Nuclear Safety Commission (CNSC) and Beausoleil First Nation to discuss a few items:

- Continued learning on the Independent Environmental Monitoring Program (IEMP)
- Issues/concerns regarding the Darlington New Nuclear Project (DNNP) and other projects in the area
- The CNSC funding programs, what they are and how they can help

You had also mentioned that Wednesday tends to work better for meetings on your end. To make sure we have the appropriate CNSC staff available on our end, I would have the following dates/times available:

- March 27th at 11:00am
- April 3rd at 11:00am
- April 3rd at 2pm

Let me know if any of these dates/times would work, or if you have other availability throughout those weeks.

Here is also some information about the funding programs that you can read before our meeting if you'd like: Funding programs (cnsc-ccsn.gc.ca).

Thanks again for taking the time to connect with me!

Natalie

Natalie Dormer (she/her/elle)

Policy Officer

Indigenous and Stakeholeder Relations Division (ISRD)

Canadian Nuclear Safety Commission

natalie.dormer@cnsc-ccsn.gc.ca / Cell : 343-540-7411

Agente en politiques

Division des relations avec les Autochtones et les parties intérssées

Commission canadienne de sûreté nucléaire

natalie.dormer@cnsc-ccsn.gc.ca / Cell : 343-540-7411

--
Miigwech,

Lua (She/Her)
(705) 247 2888
*Please note, that this email **DOES NOT** count as a proper consultation.*
Beausoleil First Nation Lands & Resources
11-B O'Gemaa Miikan Christian Island, ON L9M 0A9

--
Thank you kindly,

Lua (She/Her)
(705) 247 2888
*Please note, that this email **DOES NOT** count as a proper consultation.*
Beausoleil First Nation Lands & Resources
11-B O'Gemaa Miikan Christian Island, ON L9M 0A9

B.9 Correspondence with Saugeen Ojibway Nation

From:	Manickum, Katherine
To:	Michael Chegahno
Cc:	Stevenson, Jeff; McLean, Kyle; Levine, Adam; DeCoste, Laura; Janzen, Emily; Rzentkowski, Bartek;
Subject:	DNNP information for the SON
Sent:	2023-01-27 3:35:24 PM

Hi Mike,

I am reaching out to address one of the questions that came from the SON Steering Committee meeting last week regarding clarification on timelines and upcoming activities for the Darlington New Nuclear Project (DNNP).

Currently, Ontario Power Generation's (OPG) Updated Plant Parameter Envelope Report (PPE) and Environmental Impact Statement Review Report (EIS) are posted to the Lets Talk Nuclear Safety platform for public comment **until March 20th**. There is also a plan to have a workshop in April (dates to be determined). Once logistics have been finalized, invitations will be sent out to Indigenous Nations and communities and specific public groups and organizations with an interest in the project. The purpose of the workshop will be to discuss themes from the comments and gather feedback to help the CNSC better understand the concerns and key areas of interest about the DNNP project and these two OPG documents in particular. This information will contribute to CNSC staff's review of the two documents (PPE and EIS) and our ongoing consultation and engagement efforts on this project.

In addition to this, there will be a Commission hearing on these documents and the EA aspect of the DNNP at a future date, yet to be determined. This will include formal interventions to the Commission. CNSC staff's Commission Member Documents and assessment of OPG's documents will be made available for review in advance of the intervention deadline as per usual practice. There will also be additional funding opportunities to support this phase in the process.

Here is a list of the different opportunities/activities associated with this phase of the review process:

What	**When**
Posting project information on the *Open Government* portal	November 2022 until project closure *Currently in progress*
Presenting EIS and PPE Review reports on *Let's Talk Nuclear Safety* for public comment	November 2022 to March 20, 2022 *Currently in progress*
Information Webinars	November 2022 (complete) May 2023 *We are aiming to hold webinars bi-annually, with the next one in May, 2023. However, dates are subject to change to adjust to certain stages of the project. Once webinars are organized, they will be announced on all social media channels. Sessions will be recorded and posted to the CNSC's YouTube channel.*
EIS & PPE Review Workshop	April 2023 – Exact date TBD. Invitations will be sent out to all PFP participants, Indigenous Nations and communities and specific public

	groups and organizations with an interest in the project.

In addition to these activities we are very interested in engaging and consulting with the SON directly on this project and working to understand the SON's concerns and address them. This would also be a great opportunity to provide an overview of CNSC staff's assessment of OPG's documentation and reports for the DNNP when available. We look forward to working with you and the SON on the DNNP.

Have a great weekend,

Katherine Manickum (she/her/elle)

Policy Officer
Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission / Government of Canada
Katherine.Manickum@cnsc-ccsn.gc.ca | 343-576-6497

Agente des politiques
Division des relations avec les Autochtones et les intervenants
Commission canadienne de sûreté nucléaire / Gouvernement du Canada
Katherine.Manickum@cnsc-ccsn.gc.ca | 343-576-6497

From:	Zenobi, Adam
To:	Michael Chegahno
Cc:	Darlington New Nuclear Project / Nouveau projet nucleaire de Darlington; Ducros, Caroline; Stevenson, Jeff; Manickum, Katherine; DeCoste, Laura;
Subject:	Join the CNSC's workshop on April 4 to discuss Ontario Power Generation's Updated Plant Parameter Envelope and Environmental Impact Statement Review reports
Sent:	2023-02-17 11:09:13 AM

Hello Michael,

As an Indigenous Nation with an interest in the review of Ontario Power Generation's Updated Plant Parameter Envelope and Environmental Impact Statement Review reports for the Darlington New Nuclear Project (DNNP), as well as a recipient of participant funding, the Canadian Nuclear Safety Commission (CNSC) would like to invite Saugeen Ojibway Nation to participate in the following related workshop. Please see below for more details. The CNSC is also happy to have separate meetings with the SON to discuss the DNNP, should you be interested.

Please note that written comments on the two reports are due to the CNSC by March 20, 2023. Comments may be submitted via e-mail to dnnp-npnd@cnsc-ccsn.gc.ca or may be posted online on the *Let's Talk Nuclear Safety* forum.

WORKSHOP INVITATION

Join the Canadian Nuclear Safety Commission (CNSC), either in-person or online, on April 4th to discuss Ontario Power Generation's (OPG's) Darlington New Nuclear Project (DNNP). The focus will be on the following documents submitted to the CNSC as part of OPG's DNNP Licence to Construct application:

- Updated Plant Parameter Envelope Report
- Environmental Impact Statement Review Report

These documents were submitted by OPG to CNSC to demonstrate that the GE Hitachi BWRX-300 remains within the bounds of the approved environmental assessment. Particular attention will be given to the Indigenous Nations and communities, and the public reviews of the documents. These documents are currently posted on the *Let's Talk Nuclear Safety* forum for review and comment until March 20, 2023.

The workshop will be a one day, hybrid event. Attendees will be welcome to join in-person at a location TBD in the Municipality of Clarington or online through Zoom, a virtual meeting platform. Registration is required.

Click here to register or follow the link below:
https://us06web.zoom.us/webinar/register/WN_j-vKAPb4QBSBC_DAMctqIA

In-person attendance

Date: Tuesday, April 4, 2023
Time: 9:00 a.m. to 4:00 p.m. (EST)
Location: Municipality of Clarington (exact location TBD and will be shared with registered participants prior to the event)

Online attendance
Date: Tuesday, April 4, 2023
Time: 9:00 a.m. to 4:00 p.m. (EST)
Platform: Zoom (link will be provided prior to the event)

Please note the registration period for in-person and online attendance closes on March 15, 2023.

About the Workshop
The workshop will serve as an opportunity to discuss the Indigenous Nations and communities, and the public review of these documents. Comments received on these documents will inform the contents of the workshop. CNSC will not be making any recommendations or decisions regarding the licensing process for OPG's DNNP during this workshop. Feedback received during the workshop will help the CNSC to better understand this project and may inform CNSC recommendations to the Commission at future licensing hearings.

An event schedule and additional workshop information will be shared with registered guests in advance of the event.

The workshop will not be recorded.

Questions and accessibility assistance
If you have any questions about the workshop or the registration process, or to request an accommodation for accessibility, please contact us by e-mail at dnnp-npnd@cnsc-ccsn.gc.ca or call 343-548-2828.

Thank you,

Sent on behalf of:

Caroline Ducros (PhD)
(she/they; elle/iel)

Director General
Directorate of Advanced Reactor Technologies (DART)
Canadian Nuclear Safety Commission
www.nuclearsafety.gc.ca
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From:	Michael Chegahno
To:	Darlington New Nuclear Project / Nouveau projet nucleaire de Darlington
Cc:	Zenobi, Adam
Subject:	Saugeen Ojibway Nation - DNNP Submission
Attachments:	Saugeen Ojibway Nation DNNP Phase 1 Submissions 2023 04 03.pdf
Sent:	2023-04-03 10:02:02 AM

Hello.

Please see attached submission on behalf of Saugeen Ojibway Nation.

If there are any issues with the attached, please let me know.

Miigwech.

--
Michael Chegahno
Energy Manager
Office: 519-534-5507

Environment Office
Saugeen Ojibway Nation.
10129 Hwy 6 Georgian Bluffs, ON
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Written Submissions of the Saugeen Ojibway Nation –
Darlington New Nuclear Power Project pre-licensing consultation

April 3, 2023

Introduction

The purpose of this document is to provide written submissions on behalf of the Saugeen Ojibway Nation (SON) to the Canadian Nuclear Safety Commission (CSNC) as part of the Darlington New Nuclear Project (DNNP) pre-licensing consultation process.

The SON is comprised of the Anishinaabe People of the Chippewas of Nawash Unceded First Nation and Chippewas of Saugeen First Nation. The SON's Territory (or Anishinaabekiing) encompasses much of the Saugeen (Bruce) Peninsula, extending down south of Goderich and east of Collingwood. The waters surrounding these lands and the lakebed of Lake Huron from the shore to the international boundary with the United States and to halfway across Georgian Bay are also part of the SON's Territory.

The SON's ancestors have used and occupied Anishinaabekiing since time immemorial and its People continue to do so today. The SON's Territory consists of everything integral to life—the lands, rivers, lakes, winds, plants, people, animals, and fish. Anishinaabekiing has sustained the SON People physically and spiritually for countless generations and must continue to do so far into the future.

The development of the nuclear industry in the SON's Territory has played a major role in shaping the land and the SON People's place within it.[1] Without consultation, the SON became host to the world's largest operating nuclear facility, a now decommissioned nuclear reactor, the vast majority of Ontario's low and intermediate-level waste (L&ILW), and 40 percent of Canada's spent fuel.

The SON's Territory is currently being considered as one of two potential sites for Canada's deep geological repository (DGR). As such, the SON is being asked to accept all of Canada's 5.5 million bundles of spent fuel from existing facilities for permanent disposal. As the Nuclear Waste Management Organization (NWMO) is now recommending to the federal Minister of Natural Resources that ILW be co-located with the spent fuel, the scope of this project may expand significantly.[2]

The launching of a small modular reactor (SMR) industry in Canada would radically impact plans for radioactive waste management, storage, and disposal moving forward. No longer would the NWMO only be required to plan for the waste produced by Canada's aging fleet of CANDU reactors—all of which will be decommissioned within then next three or four decades—the introduction of SMRs would create an entirely new and endless stream of spent fuel and L&ILW. The potential implications of this development and how it may

[1] The history and current reality of the nuclear industry in SON Territory has been described in previous SON submissions relating to the licensing of the Western Waste Management Facility and the Joint Review Panel for Ontario Power Generation's deep geological repository for Low and Intermediate Level Wastes proposal.
[2] Nuclear Waste Management Organization, "Draft Integrated Strategy for Radioactive Waste" (August 25, 2022), online at: <radwasteplanning.ca/>.

impact the SON's Territory and People has not been the subject of any consultation or substantive discussion with the SON by the Crown or its agents. It is clear, however, that the pressure on the SON to accept this new waste will be enormous. As a result, the SON has a deep and unique interest in the licensing process of this first proposed commercial SMR at Darlington as well as Canada's larger aspirations to launch a new SMR industry.

Background

In October 2022, Ontario Power Generation (OPG) submitted its DNNP Application for a Licence to Construct a Reactor Facility to the CNSC. The first phase of the application process is to determine whether the Environmental Impact Statement (EIS) and subsequent Environmental Assessment (EA) conducted by a federally appointed joint review panel adequately considered the impacts of the chosen reactor design: the GE Hitachi BWRX-300. The EA, which was conducted over a decade ago, was based on bounded technologies in a Plant Parameter Envelope (PPE). As the BWRX-300 was not among the four reactor technologies assessed in that process, the CNSC must determine whether the EA findings are still valid.

OPG states that the EA adequately addresses possible impacts because the BWRX-300 belongs to the same Light Water Reactor family as the Pressurized Water Reactor that was included in the EIS. As with the Pressurized Water Reactor, the BWRX-300 requires lightly enriched uranium (U-235 enrichment up to 5 percent) and light water as the coolant and moderator. Because OPG has opted for an SMR instead of a full-sized reactor, it argues that virtually all predicted negative impacts from the project will be diminished due to the reduced scale of the project. OPG concludes that no further impact assessment is required.

The SON submits that the conversion of this project to an SMR does not signal a reduction of impacts. Rather, the DNNP represents the launching of a new era in nuclear development that could have widespread and lasting impacts. The original EA fails to capture the implications of this project as the first commercial SMR in the country. Canada, through policy initiatives and the provision of funding to support an SMR industry, is actively launching a new era in nuclear development. Now is the moment to undertake a credible, comprehensive, and public assessment of the potential impacts. For this reason, SON will request this project be designated under the *Impact Assessment Act* (IAA) for a strategic and a regional assessment. SON will also be seeking clarity into whether and to what extent Canada's policy and programs directed at promoting SMRs have been subjected to, or considered for, a Strategic Environmental Assessment (SEA) per the Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals.[3]

[3] Privy Council Office and the Canadian Environmental Assessment Agency, "The Cabinet directive on the environmental assessment of policy, plan and program proposals: guidelines for implementing the Cabinet directive", (2010), online at: https://www.canada.ca/en/impact-assessment-agency/programs/strategic-environmental-assessment/cabinet-directive-environmental-assessment-policy-plan-program-proposals.html.

Comments and Recommendations

SON staff and subject-matter experts have completed a review and analysis of the project. The following comments will focus on concerns regarding the existing regulatory and policy framework under which this and future SMRs will be considered.

Promotion of a Nuclear Renaissance

Government and industry have expressed exceptional enthusiasm about the promise of SMRs and the future of nuclear energy as an important part of the solution to reduce carbon emissions. SMRs are understood to be key to the widespread deployment of nuclear reactors across the country and into remote communities because they can be manufactured offsite and transported to a final destination. Also, because of their modular design, they can be expanded upon to meet increased energy demands.

The Government of Canada has made it clear that it intends to support and promote the development of a new SMR industry and economy. In October 2022—the same month OPG submitted its DNNP licence to the CNSC—the Minister of Natural Resources presented Canada's National Statement on Nuclear Energy in Washington, D.C. Minister Wilkinson explained that Canada intends to be an early adopter of SMRs and the government's investment of billions of dollars to support their development and deployment "underlines the accelerating momentum in nuclear energy and highlights Canada's desire to play a leadership role in this area."[4]

This announcement aligns with various other federal and provincial efforts to promote SMRs, such as Canada's SMR Roadmap, SMR Action Plan, and the Memorandum of Understanding on the cooperation of the development and deployment of SMRs between Ontario, New Brunswick, Saskatchewan, and Alberta.

"Streamlining" SMR Regulations

Both industry and government have sought to ensure that SMRs benefit from "streamlined" regulatory review, ostensibly to allow for cheaper and faster deployment. The consequence, however, will be to insulate SMRs and their deployment from full and appropriate regulatory scrutiny. The SMR Regulatory Readiness Working Group (RRWG), established as part of Canada's SMR Action Plan, highlighted the need to ensure that the federal government's new and improved IAA exempts SMRs from the "Project List" that triggers an impact assessment. The RRWG warned that:

[4] Natural Resources Canada, "Canada's National Statement on Nuclear Energy" (October 26, 2022), online at: <www.canada.ca/en/natural-resources-canada/news/2022/10/canadas-national-statement-on-nuclear-energy--the-honourable-jonathan-wilkinson-minister-of-natural-resources--the-international-atomic-energy-agen.html>.

> the pending Bill C-69 legislation poses a risk to the future of SMR deployment in Canada, particularly for the small off-grid applications. The RRWG concludes that including SMR in the "Project List" for consideration under the pending Impact Assessment Act could result in undue timelines and costs for SMR project approval, which are likely to be an impediment to SMR deployment.[5]

Ultimately, these efforts to have SMRs exempted bore fruit: SMRs with a thermal capacity of 200 MWth or less are exempted from the "Project List."[6] Nine of the 11 vendor design reviews being conducted by CNSC fall under this threshold. Also exempted are new storage facilities for irradiated nuclear fuel or nuclear waste associated with these SMRs.[7]

Perhaps even more troubling from the SON's perspective is the exemption of new reactors with the combined thermal capacity of up to 900 MWth if located within the licensed boundaries of an existing Class IA facility.[8] This exemption sets the stage for projects like the DNNP, which sits within the bounds of the existing Darlington nuclear facility. It also sets the stage for future nuclear development on the SON's Territory at the Bruce Power site.

The SON submits that regulatory oversight should be increased rather than diminished when a proponent is proposing to place SMRs next to existing CANDU reactors. Such proximity raises important considerations that should be addressed, such as how the modular units would share support systems between themselves as well as with existing CANDU reactors. Compounding environmental effects require careful and integrated assessments. As identified during the Fukushima nuclear disaster, having many units at a single site can have unexpected consequences, such as common mode failures impacting the operations and safety of neighbouring plants.

Establishing lower thresholds for triggering impact assessments on sites already subjected to nuclear development is a red flag for environmental and distributive justice. That the regulations are specifically designed to encourage the perpetuation of nuclear development at existing sites threatens to exacerbate the injustices faced by the SON and other similarly placed Indigenous groups.

We already see the consequences of this weaker environmental and impact review regime with respect to other proposed demonstration SMRs in Canada, including the Advanced Reactor Concepts sodium-cooled fast reactor (ARC-100) in Point Lepreau, New Brunswick. Although concerned citizens, community groups, and First Nations requested that the

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[5] Regulatory Readiness Working Group, "Canadian SMR Roadmap: Regulatory Readiness Working Group, Final Report" (August 1, 2018), online at: <smrroadmap.ca/wp-content/uploads/2018/12/Regulatory-Readiness-WG.pdf?x64773>.
[6] *Physical Activities Regulations*, SOR/2019-285, s 27(b).
[7] *Ibid*, s 28.
[8] *Ibid*, s 27(a).

Minister of Environment and Climate Change Canada designate this project for an impact assessment, he refused on the basis that the project would be subject to existing nuclear licencing and provincial/federal environmental regulatory processes.[9] This logic undermines the importance of a coordinated impact assessment as a public planning and decision-making tool to determine the positive and negative effects of a project. It also undermines the public—and the SON's—trust in the assessment process.

BWRX-300 Environmental Assessment Concerns

With respect to the BWRX-300 design itself as it relates to OPG's EIS, a couple issues were not well addressed in the EIS and warrant additional review. First, the EIS does not appear to have assessed the impacts of the transportation of new waste to the Western Waste Management Facility (WWMF). Merely relying on history and current transportation routes to the only radioactive waste storage facility does not constitute an assessment. Alternatives are not addressed.

Second, the EIS does not adequate analyze the impacts of these new sources of waste. It does not take into account the impacts of expanding the different waste generation from the SMR at DNNP. The WWMF is identified as the preferred recipient for radioactive waste, yet there is no assessment of the impact of the increased amounts in both radioactivity and volume on the environment (or on the operating license) of the WWMF.

New Fuel Source

Basic but crucial questions regarding SMR fuel, such as where it will come from, remain unanswered. Despite having some of the largest uranium deposits in the world and a major uranium mining and milling industry, Canada does not have the capacity to produce the lightly enriched uranium required by SMRs. This issue was recognized in SMR Roadmap in which Canada explained that SMRs

> will use a grade of low-enriched uranium fuel, and fuel types that are different from the natural uranium fuel bundles currently used in Canadian nuclear reactors. While fuel for demonstration projects may be able to be sourced from the United States, both China and Russia are positioned to lead the commercial SMR fuel supply market.[10]

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[9] Government of Canada, "Minister's Response – Small Modular Reactor Demonstration Project" (December 22, 2022), online at: <iaac-aeic.gc.ca/050/evaluations/document/145836?culture=en-CA>. The other demonstration SMR being proposed at the Point Lepreau site (Moltex SMR) will trigger an impact assessment. This is because the project includes a fuel reprocessing facility to recycle spent fuel on site, not because of the SMR itself.

[10] Canadian Small Modular Reactor Roadmap Steering Committee, "A Call to Action: A Canadian Roadmap for Small Modular Reactors" (2018) at 23-24, online at: <smrroadmap.ca/wp-content/uploads/2018/11/SMRroadmap_EN_nov6_Web-1.pdf?x64773>.

Since the release of the roadmap in 2018, the world has changed. The United States and Europe themselves are scrambling to try to find alternatives to Russian and Chinese uranium for their light water reactors. How the fuel will be obtained and through what channels it will be transported are questions that must be addressed in an intentional, public, and transparent manner.

Quite apart from geopolitical concerns, there are also nuclear criticality safety concerns related to the use of lightly enriched uranium as the nuclear fuel. That lightly enriched uranium can go critical in normal water—unlike CANDU fuel—means that CNSC will have to ensure more safety controls are in place. That some of these controls include the use of neutron absorber (poison) in the rack design and borated water are cause for concern from a human safety and environmental protection point of view. These safety concerns will impact the entire fuel cycle from production, to transportation, to storage and disposal. These criticality issues and concerns are far different from the past rhetoric about the added safety for CANDU reactors because of the use of natural uranium as the fuel.

Waste Management

The greatest cause for concern for the SON is the question of waste management, storage, and disposal. Because of the compartmentalization of the assessment process, the proponents of SMRs have not been required to meaningfully answer the question of what happens to the waste.

OPG explains that the various waste disposal paths that may be deployed under a future DNNP operating licence depend on the characterization of the waste, but that answering these questions is not required as part of the licence to construct application. Nevertheless, OPG suggests that solid radioactive waste will likely be "shipped to a licenced off-site facility for incineration, decontamination, volume minimization, and/or storage," and "[r]adioactive liquid chemicals are likely to be incinerated or solidified and stored at an OPG licensed facility."[11]

Shipping "off-site" to be stored in an "OPG licensed facility" means shipping it to the SON's Territory. Unless OPG has some as yet undisclosed plans to develop another centralized processing and storage facility, all this waste is destined for the WWMF—the only central storage facility for OPG's L&ILW—which is situated in the heart of SON's Territory.

The SON's Territory is intensely nuclearized. This reality has made it the target for future and permanent waste management and disposal projects. OPG's proposed plan of siting its L&ILW DGR on SON's Territory, adjacent to its current surface storage, was unsurprising, and indeed, inevitable as the most efficient and economical choice. The NWMO's planned

[11] Ontario Power Generation, "Darlington New Nuclear Project: Application for a Licence to Construct a Reactor Facility" (October 2022) at 224.

DGR for spent fuel (and perhaps ILW) is no different. The SON's Territory has been a targeted site for nuclear waste management. And so, as with all prior radioactive waste storage and disposal plans, all paths for future waste disposal point to the SON's Territory.

In the original DNNP EIS from 2009, the SON were not identified as having rights and interests that could be impacted by the project and therefore were not considered. As such, even though the SON will likely be asked to host the waste produced by this project forever, they were not mentioned once in the 1168-page EIS report. This reality demonstrates how damaging the compartmentalization of assessment processes is and there is a real need for strategic and regional assessments regarding the DNNP and SMRs more generally. Because the waste disposal issue is to be addressed by NWMO rather than the project proponents, the scope of review for SMRs is artificially narrowed. Deferred impacts are not considered. The affected Indigenous Nations are not consulted.

The bare references and hopeful assumptions regarding how the DNNP's waste will be managed is consistent with the normal pattern. The ARC-100 SMR's proposal is the same. Nine potentially affected Indigenous groups are identified as having rights and interests that could be impacted by the project—the SON are not among them. In reviewing the designation request for ARC-100, the Impact Assessment Agency noted that "the Proponent anticipates that spent fuel would be transported to a deep geological repository for long-term management."[12] The corresponding footnote, however, recognizes that:

> [t]here is no existing deep geological repository in Canada. […] Should a site be selected and a facility approved, it may be deemed suitable for the future disposal of the Proponent's used fuel from this Project (if approved), depending on waste acceptance criteria that have yet to be established and evaluated."[13]

That the NWMO has been issued a mandate to solve the nuclear waste problem does not guarantee that it will manage to do so. The NWMO does not have a site selected for a DGR project, let alone a DGR project under development. This is a fact that cannot simply be ignored. Nor can it be ignored that the current NWMO DGR project is based on fuel wastes from existing reactors. Dealing with a new and, potentially, endless stream of waste produced from an SMR industry is not part of the original Adaptive Phased Management plan. As such, there are many questions that have not been answered, such as:

- Will the NWMO seek to expand its currently planned DGR project to deal with this new waste?

[12] Impact Assessment Agency, "Analysis Report: Whether to Designate the Smal Modular Reactor Demonstration Project in New Brunswick pursuant to the Impact Assessment Act" (December 2022), online at: <iaac-aeic.gc.ca/050/evaluations/document/145835>.
[13] *Ibid.*

- Will the introduction of lightly enriched uranium impact the design specifications of the DGR project?
- Will additional DGRs be required to accommodate this new waste stream? If so, where will they be sited? And according to what time frames?
- How can the NWMO be asking the SON, or any other Nation or community, to accept a DGR when the bounds of that project are so poorly defined or understood by the industry itself?

It is unclear whether the NWMO has had the opportunity to investigate these questions deeply. It certainly has not provided publicly accessible analyses that address the issue of new SMR waste streams. Nor does its proposed Integrated Strategy for Radioactive Waste address the issues. It is simply unacceptable to defer the asking and answering of these questions to some future unspecified date. Canada cannot repeat the mistakes of the past by rushing into a new era of nuclear development without having a solution for the resulting waste. The SON have paid heavily for this lack of planning already—it is profoundly unjust to ask them to continue to do so.

Until a decision has been made by the SON membership as to whether they are willing to host the proposed DGR and until the parameters of such a project are determined, the SON will not accept fuel waste from newly approved SMR projects on the SON's Territory. Similarly, the SON will not accept the L&ILW from these projects at the WWMF for interim storage without these larger issues being addressed. Rather, if any future SMR's are approved and licenced for operation, the SON expect the radioactive waste produced by SMRs to remain on site at the facility until an acceptable waste disposal solution has been reached. The CNSC will have a critical role in working with Canada and the necessary federal departments and institutions to ensure that the SON's position is addressed in the assessment process and incorporated in any licenses issues. Government, regulators, and proponents must not assume or make plans on the basis that the SON will continue accepting radioactive waste on its Territory indefinitely, particularly given the SON's long-lasting nuclear legacy issues have not yet been meaningfully addressed or resolved.

Designation of DNNP for a Strategic and a Regional Assessment

The launch of a nuclear renaissance in this country through the development and deployment of SMRs—as marked by the potential licencing of the DNNP—requires a comprehensive and public review. The many seriously and novel issues raised by the development and deployment of SMRs, and the very real and permanent impacts this will have on SON, its Rights, Territory, and People must be understood and meaningfully addressed. This can only be accomplished through a full impact assessment or through a strategic and a regional assessment under the new IAA—legislation specifically designed to provide an enhanced tool for environmental planning. In the IAA's Preamble, Canada "recognizes the importance of regional assessments in understanding the effects of existing

or future physical activities and the importance of strategic assessments in assessing federal policies, plans or programs that are relevant to conducting impact assessments".

The SON will request that the DNNP, or the commercial launch of SMR technology that is represented by the DNNP, be designated for a strategic and regional assessment. SON will work directly with various federal authorities, including IAAC and CNSC, in preparing its request to the Minister of Environment and Climate Change.

Aboriginal Rights

The IAA also includes a recognition of Canada's legal obligation, "in the course of exercising its powers and performing its duties and functions in relation to impact, regional and strategic assessments, to ensuring respect for the rights of the Indigenous peoples of Canada recognized and affirmed by section 35 of the *Constitution Act, 1982*, and to foster reconciliation and working in partnership with them".[14]

At present, the DNNP assessment itself, the compartmentalization of impact assessments of SMRs generally, and Canada's promotion of the SMR industry more broadly, all constitute a failure to meet Canada's constitutional obligations towards the SON. Canada is now creating realities that have the potential to create an insurmountable nuclear waste management problem. As the problem grows, so will the pressure to compromise SON's rights for the "public interest". This is a situation that can and must be avoided today.

Moreover, the realities Canada is seeking to create run counter to its recent international and national commitments to Indigenous peoples. In 2016, Canada announced it would be a full supporter of the *United Nations Declaration on the Rights of Indigenous Peoples* (UN Declaration) without qualification. Article 29(2) of the UN Declaration requires that:

> States shall take effective measures to ensure that no storage or disposal of hazardous materials shall take place in the lands or territories of indigenous peoples without their free, prior and informed consent.

In 2021, Canada adopted the *United Nations Declaration on the Rights of Indigenous Peoples Act*,[15] in which it recognized that "the rights and principles affirmed in the Declaration constitute the minimum standards for the survival, dignity and well-being of Indigenous peoples of the world, and must be implemented in Canada".[16] In its recently released UN Declaration Act Action Plan, Canada has made no mention of the commitments found in Article 29(2). Instead, it has included its agenda of promoting the development and

[14] *Impact Assessment Act*, S.C. 2019, c. 28, s.1, preamble.
[15] *United Nations Declaration on the Rights of Indigenous Peoples Act*, S.C. 2021, c. 14. (UN Declaration Act)
[16] *Ibid.* at Preamble.

deployment of the SMR industry.[17] Specifically, in raising the need for alternative energy sources for remote Indigenous communities, Canada identifies SMRs—and only SMRs—as a possible "clean energy alternative".

To fail to mention other clean energy alternatives (such as geothermal, wind, solar, hydro), demonstrates a striking single-minded commitment to the promotion of Canada nuclear industry. It also demonstrates a complete disregard for the implications this could have on the SON. Canada must honour its commitment to ensuring Indigenous peoples have the right of free, prior, and informed consent prior to the storing or disposing of radioactive waste on their Territories by ensuring consent is secured before the launching of the SMR industry, not after.

Conclusion

The question posed by the CNSC in this pre-consultation phase for OPG's Licence to Construct application is too narrow. CNSC asks whether the existing EA adequately addresses the considered impacts of the BWRX-300 reactor technology. Although this question is critical and there does remain work to be done in light of the chosen technology, there are larger, foundational issues that must be addressed. Canada is seeking to rapidly usher in a new chapter in nuclear energy production by providing substantial public funds to industry and reducing regulatory scrutiny of SMR projects. The consequence of these actions is the perpetuation of the negative impacts experience by the SON at the hands of the nuclear industry.

For over 60 years, the SON have been at the heart of the development of the nuclear industry in this country, without consultation or consent. Longstanding legacy issues regarding this history remain unresolved. Understood in this context, it becomes clear that any decision the CNSC makes regarding the DNNP stands to impact the SON's rights, interests, and future in profound and lasting ways. As the first commercial reactor in this country, the DNNP could set a precedent that could deeply affect the SON's Territory and its People's place within it.

At this stage of the review, the SON expect to continue to work with CNSC staff to fully understand the implications of the DNNP project and its potential impacts on SON rights and interests. The SON expects that this engagement and consultation will inform submissions that CNSC staff will ultimately make to the Commission, as well as the submissions the SON will make to the Commission. As part of these discussion, the SON will explore the possibility of joint, or aligned, submissions aimed at accommodating SON

[17] Government of Canada, "Draft *United Nations Declaration on the Rights of Indigenous Peoples* Action Plan", at s. 44, online at: <https://www.justice.gc.ca/eng/declaration/ap-pa/ah/index.html>.

rights and interests. This could include the option of a joint request that this project be designated under the IAA for a strategic and a regional assessment.

Finally, it bears repeating that until a decision has been made by the SON membership as to whether they are willing to host the proposed DGR, and until the parameters of such a project are determined, the SON will not accept within its Territory wastes from any newly approved SMR projects. Accordingly, the SON will work with all responsible parties to develop a regulatory framework, guidance and plans that will require that radioactive waste produced by SMRs remain on site at the facility until an acceptable waste disposal solution has been reached. The SON expects that CNSC will have a critical role in this work and to ensure that Canada and the responsible federal departments and institutions understand and accommodate the SON's concerns in this regard. Plans to create a renewed nuclear industry cannot be based on the underlying assumption that the SON will unquestioningly accept new waste streams into its Territory. Canada has committed to implementing the UN Declaration—it is time to recognize the implications of this commitment and to honour it.

From:	DeCoste, Laura
To:	manager.energy@saugeenojibwaynation.ca; manager@saugeenojibwaynation.ca;
Cc:	ktucker@pstlaw.ca; Levine, Adam; Martin, Marina; Stevenson, Jeff; McLean, Kyle; Janzen, Emily;
Subject:	Response to request for information about the DNNP CMD contents
Sent:	2023-07-18 3:54:43 PM

Hello Mike!

As requested at the SON/CNSC monthly meeting today, I am providing information about what is included in the DNNP Commission Member Document (CMD) related to engagement with the SON and the concerns raised by the SON. The focus of this first CMD is on whether OPG's chosen technology (BWRX-300) fits within the bounds of the Environment Assessment (EA). We have summarized the issues and concerns raised by Indigenous Nations and communities related to this topic in this CMD. We acknowledge that additional concerns related to the DNNP more generally, the UN Declaration, the policy framework for SMRs and the long-term storage of waste have also been raised. We remain committed to continuing to discussing these issues and concerns and working to address them to the extent possible.

The following information about concerns raised by the SON related to the applicability of EA to the BWRX-300 reactor technology is included in the CMD: "Saugeen Ojibway Nation commented that the EA fails to capture the implications of the project as the first SMR in Canada and are of the opinion that a strategic and regional assessment under the *Impact Assessment Act* is needed in order to comprehensively characterize the potential impacts. The SON raised concerns that the EIS did not consider the transportation of wastes to the Western Waste Management Facility in their Territory, nor did it consider the impacts of new sources of waste to their Territory."

Additionally, the CMD lists the correspondence sent to identified Indigenous Nations and communities (including the SON) and any consultation and engagement activities that were conducted, such as notification letters, PFP announcements, requests for comments on the EIS/PPE documents, DNNP specific meetings, and invitations to public webinars/workshop. The CMD also indicates that we have Terms of Reference for Long-term engagement in place with multiple Indigenous Nations and communities, including the SON, and that we have discussed the DNNP at regularly scheduled meetings with those Indigenous Nations and communities.

If the Commission decides that the BWRX-300 reactor fits within the bounds of the EA, a second hearing would occur and would be focused on the Licence to Construct application. In this case a second CMD would be written, which would include more detail regarding consultation and measures to address the concerns raised by Indigenous Nations and communities. CNSC staff would be happy to discuss opportunities for the SON to provide their input into the second CMD, related to the Licence to Construct application, in the coming months.

Please let me know if you have any additional questions!

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
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From:	Janzen, Emily
To:	mdiamond.energy@saugeenojibwaynation.ca; bnickel.energy@saugeenojibwaynation.ca; ktucker@pstlaw.ca;
Cc:	Stevenson, Jeff; Eaton, Sarah;
Subject:	Sharing the CMD for DNNP Hearing #1
Sent:	2023-09-20 2:15:31 PM

Follow Up Flag:	Follow up
Flag Status:	Completed

Hi Mike, Katie,

As promised during our monthly CNSC/SON meeting yesterday, I've attached the Commission Member Document (CMD) for the Darlington New Nuclear Project hearing scheduled for January 2024. This document has been posted online here, along with OPG's hearing submission. The webinar we have planned for the end of October, that I mentioned in the meeting, will provide an overview of the CMD's conclusions and recommendations and the upcoming public hearing. We'll be sure to share details on how to attend the webinar as they are finalized.

I had mentioned a summary document during the meeting as well. This should be ready in the coming weeks and we will share that with you when it's ready.

Let me know if you have any questions.

Thank you!

Emily Janzen (*she/her*)
Project Officer
Advanced Reactor Licensing Division / Division de l'autorisation des réacteurs avancés
Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire
emily.janzen@cnsc-ccsn.gc.ca | Mobile: 343-548-0590

From:	Dormer, Natalie
To:	bnickel.energy@saugeenojibwaynation.ca; mdiamond.energy@saugeenojibwaynation.ca; amonem@pstlaw.ca; manager@saugeenojibwaynation.ca;
Cc:	Ducros, Caroline; Broeders, Mark; Simon, Nicole; Rzentkowski, Bartek; Janzen, Emily; Naraine, Matthew; Ouellette, Dominique; DeCoste, Laura; Levine, Adam; Cattrysse, Clare; Darlington New Nuclear Project / Nouveau projet nucleaire de Darlington;
Subject:	CNSC Response to the SON's Comments on Darlington New Nuclear Project (DNNP) Updated Plant Parameter Envelope (PPE) and Environmental Impact Statement (EIS) Review
Sent:	2023-11-28 9:51:15 AM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Good morning,

Please find the attached letter of correspondence which is of interest to the Saugeen Ojibway Nation.

This email will serve as confirmation of notification for this correspondence. In an effort to shrink our environmental footprint, CNSC will not be mailing a hard copy of this letter.

Please send your questions regarding this letter to Nicole Simon at nicole.simon@cnsc-ccsn.gc.ca, or to Laura Decoste at laura.decoste@cnsc-ccsn.gc.ca.

Best,
Natalie

Natalie Dormer (she/her/elle)
Administrative Assistant / Adjointe administrative
Advanced Reactor Licensing Division / Division de l'autorisation des réacteurs avancés
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Directorate of Advanced Reactor Technologies

UNCLASSIFIED
e-Doc 7083159
File 2.01

November 28, 2023

Saugeen Ojibway Nation
10129 Hwy 6 Georgian Bluffs, ON
N0H 2T0

Subject: **CNSC Response to the SON's Comments on Darlington New Nuclear Project (DNNP) Updated Plant Parameter Envelope (PPE) and Environmental Impact Statement (EIS) Review**

Hello,

The purpose of this letter is to provide a response to the Saugeen Ojibway Nation's (SON) comments on OPG's updated Plant Parameter Envelope (PPE) Report and Environmental Impact Statement (EIS) Review Report, submitted to CNSC staff on April 3, 2023 [1].

CNSC staff appreciate the involvement of representatives from the SON in the CNSC's Darlington New Nuclear Project (DNNP) and the thorough and detailed comments that were submitted. In the attachment to this letter, CNSC staff have provided responses to some of the concerns and themes raised by the SON related to the applicability of the DNNP Environmental Assessment (EA) to deployment of up to four BWRX-300 reactors.

CNSC staff have considered the comments and feedback in our technical review and have encouraged OPG to have discussions regarding these comments with the SON as well. CNSC staff continue to remain open to meeting with SON to further discuss comments, concerns, or the contents of this letter. CNSC staff take the comments seriously and hope that these responses lead to continued discussions on your outstanding concerns.

In response to the Joint Review Panel (JRP) Recommendation #1 [2], OPG has reviewed the 2009 DNNP EIS, driven by the revised PPE that encompasses the deployment of up to four BWRX-300 reactors. The objective of this review was to verify that any predicted environmental effects of the deployment of the BWRX-300 reactors remain bounded within the EA.

The upcoming Commission Hearing, currently scheduled for the week of January 22, 2024, will focus on the applicability of the EA to the BWRX-300 reactors, in accordance with JRP Recommendation #1. CNSC staff's recommendation to the Commission is detailed in a Commission Member Document (CMD), which was shared with the SON on September 20, 2023.

CNSC staff acknowledge that the SON have additional concerns that are outside the scope of the first hearing and regarding SMRs more generally, including the promotion of nuclear energy by the government, the streamlining of SMR regulations, long-term waste management for SMRs, siting of a deep geological repository, as well as the potential increase of nuclear waste from SMRs for which the Nuclear Waste Management Organization will be required to plan. CNSC staff remain fully committed to working to address these concerns to the extent possible and we are open to focused discussions on these topics either within or in addition to our regularly scheduled meetings between the CNSC and the SON.

Additionally, the CNSC will continue to discuss the DNNP with the SON, in advance of the potential Commission proceeding in relation to OPG's application for a Licence to Construct a single BWRX-300 reactor at the DNNP site. CNSC staff look forward to ongoing meetings and discussions on these important topics.

Should you have any questions about this letter please do not hesitate to contact me, Nicole Simon at Nicole.Simon@cnsc-ccsn.gc.ca or (613) 281-5405, or Laura DeCoste at laura.decoste@cnsc-ccsn.gc.ca or (343) 571-6491.

Regards,

Sarah Eaton
Director General,
Directorate of Advanced Reactor Technologies (DART)

c.c.: C. Ducros, M. Broeders, N. Simon, B. Rzentkowski, E. Janzen, M. Naraine, D. Ouellette, L. DeCoste, A. Levine, C. Cattrysse, DNNP Mailbox (CNSC)

References

[1] Letter from the SON to CNSC, *Comment Submission: Written Submissions of the Saugeen Ojibway Nation –Darlington New Nuclear Power Project pre-licensing consultation*, dated April 3, 2023

[2] Report, *Joint Review Panel – Environmental Assessment Report – Darlington New Nuclear Power Plant Project*, dated August 25, 2011 (e-Doc 3784878).

[3] CNSC Licence, *Nuclear Power Reactor Site Preparation Licence for Ontario Power Generation New Nuclear at Darlington Generating Station*, PSRL 18.00/2031, effective date October 12, 2021 (e-Doc 6504521).

Appendix

CNSC staff responses to the SON's Issues, Concerns and Comments Related to the Applicability of the BWRX-300 Reactors to the DNNP Environmental Assessment

SON's Concern or Comment	CNSC Response
The SON commented that the EA fails to capture the implications of the DNNP as the first SMR in Canada and are of the opinion that this can only be accomplished through a full Impact Assessment or Strategic and Regional Assessment under the *Impact Assessment Act*. The SON also note an intent to request that the DNNP, or commercial launch of SMR technology that is represented by the DNNP, be designated for a strategic and regional assessment.	The CNSC acknowledges SON's comment. The DNNP EA was conducted and approved under the *Canadian Environmental Assessment Act* of 1992, which was the governing legislation at the time of the assessment. Given that a decision was rendered on this proposed project under the former Act, the project is not subject to the 2019 IAA. Strategic Assessments under the IAA examine how the development or refinement of strategic-level initiatives, including policies, plans and programs, or issues could help facilitate the conduct of project-level Integrated Impact Assessments. Regional Assessments inform the planning and management of cumulative effects and inform project Integrated Impact Assessments. As per the IAA, the Minister of Environment may establish a committee—or authorise the Impact Assessment Agency—to conduct a strategic or regional assessment (as per sections 92, 93, and 95 of the Impact Assessment Act). The CNSC does not have the regulatory authority to initiate such an assessment under the NSCA. The original EA process for this proposed project resulted in a decision that determined the deployment of up to four large-scale reactors would not result in adverse environmental effects provided mitigation measures were properly implemented. Further, as noted as part of the Joint Review Panel's recommendations, the Commission will need to determine whether the existing environmental assessment is applicable to the reactor technology selected for the project. The SON will have the opportunity to share

SON's Concern or Comment	CNSC Response
	their perspective as part of the first hearing to be held the week of January 22, 2024. CNSC staff are conducting a thorough technical review of OPG's proposal, to ensure that it is safe for humans and the environment. CNSC staff are also committed to meaningful and ongoing consultation with Indigenous Nations and communities to address concerns and questions arising from the DNNP project.
The SON raised concerns that the EA did not consider the transportation and storage of wastes from the DNNP at the Western Waste Management Facility located in their territory. The SON commented that the EIS does not adequately analyze the impacts of these new sources of waste. It does not take into account the impacts of expanding the different waste generation from the SMR at DNNP. The WWMF is identified as the preferred recipient for radioactive waste, yet there is no assessment of the impact of the increased amounts in both radioactivity and volume on the environment (or on the operating licence) of the WWMF.	As part of the original Joint Review Panel Environment (JRP) Assessment process, the Panel reviewed OPG's plans for the management of spent fuel and low and intermediate-level waste and determined whether OPG's plans will result in significant residual effects on the human environment after mitigation measures are applied. The Panel concluded that radioactive and used fuel waste is not likely to result in significant adverse environmental effects, considering the implementation of controls and measures required under the CNSC regulations for radioactive waste management. The Panel also issued two recommendations and OPG remains committed to implementing the recommendations from the JRP for waste management (DNNP Commitments Report, NK054-REP-01210-00078), D-C-9.1). CNSC staff are tracking this commitment and will only close the commitment if OPG has demonstrated they have adequately addressed the recommendation from the Panel. To be accepted at the WWMF, waste must meet defined waste acceptance criteria and be within the authorised limits of the licence for the facility. CNSC staff note that the WWMF is licensed for storage of low-level and intermediate-level waste, and each waste stream has defined acceptance criteria specified in OPG procedures, bound within limits authorised by its operating licence. OPG will be required to provide detailed analysis of all radioactive waste streams generated from BWRX-300 operations to ensure that they meet

SON's Concern or Comment	CNSC Response
	the acceptance criteria to be transported and stored at the WWMF. The CNSC will review OPG's plan to ensure it provides for the safe management and transportation of all radioactive waste streams. If the Commission determines that the EA is applicable to the BWRX-300 technology and the DNNP project progresses through the licensing stages, CNSC staff will evaluate OPG's proposed plans for the long-term management of wastes produced by the DNNP.

From:	Stevenson, Jeff
To:	Bob Nickel; ktucker@pstlaw.ca;
Cc:	Mike Diamond; Janzen, Emily; D'Onofrio, Rebecca; Martin, Marina; McLean, Kyle;
Subject:	Question on DNNP and Potential Waste Material
Sent:	2023-11-29 6:59:00 AM

Hi Bob, Katie,

During our last monthly meeting, you had asked about any waste that might be going from the Darlington New Nuclear Project (DNNP) to the Western Waste Management Facility (WWMF) in SON traditional territory. Further to what was discussed at the meeting, we wanted to share a comprehensive view on this.

Currently there is no expectation that any of the lands that are being worked on as part of the Licence to Prepare Site (LTPS) are contaminated. OPG has performed soil characterization studies in support of the licence that was issued and radiological contamination is not anticipated.

In the event that unexpected contamination is discovered during site preparation for the DNNP, CNSC staff would be notified if the contamination is in excess of the prescribed limits. OPG is required to adhere to the *Radiation Protection Regulations* at all times, including during site preparation activities, and these regulations specify that notification must occur if contamination is found "above the exemption quantity" found in the *Nuclear Substances and Radiation Devices Regulations.* Additionally, in general, the *Nuclear Safety and Control Act* subsection 45(a) require that any person that identifies that a place or vehicle is contaminated in excess of the prescribed limits (in this case, the exemption quantities in the *Nuclear Substance and Radiation Devices Regulations*) must immediately notify the CNSC. From there, we would be able to share any notification received with the SON, for your information. Note that we also expect that OPG will continue to maintain open lines of communication with you and would also notify you of the discovery, should it occur.

I hope this helps to answer the question. Happy to have further discussions on this if you wish.

Cheers,
Jeff

Jeff Stevenson

Power Reactor Site Inspector, Bruce Regulatory Program Division
Canadian Nuclear Safety Commission / Government of Canada
NEW E-MAIL : Jeff.Stevenson@cnsc-ccsn.gc.ca / Tel: 519-361-3797 / Cell : 613-894-4698

Inspecteur de centrale nucléaire, Division du programme de la règlementation de Bruce

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Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

CNSC CCSN

From:	McLean, Kyle
To:	Katie Tucker; Bob Nickel;
Cc:	Stevenson, Jeff
Subject:	Agenda and Info for CNSC Hearing on DNNP
Sent:	2024-01-03 10:19:00 AM

Hi Katie and Bob,

Happy New Year!

I have attached the agenda for the upcoming Commission Hearing for the Darlington New Nuclear Project that came in over the holidays, and attached the public summary of the CNSC CMD that was put together.

If there is further interest in setting up a DNNP focused meeting over the next while, please feel free to reach out and we can set one up.

Regards,

Kyle McLean

Power Reactor Site Inspector, Regulatory Operations Branch
Canadian Nuclear Safety Commission / Government of Canada
kyle.mclean@cnsc-ccsn.gc.ca / 226-963-1168

Inspecteur de centrale nucléaire, Direction générale de la réglementation des opérations,
Commission canadienne de sûreté nucléaire / Gouvernement du Canada
kyle.mclean@cnsc-ccsn.gc.ca / 226-963-1168

From:	Katie Tucker
To:	DeCoste, Laura
Cc:	Bob Nickel; Stevenson, Jeff; Janzen, Emily;
Subject:	Re: Rights Impact Assessment
Sent:	2024-01-18 8:50:05 AM

Follow Up Flag:	Follow up
Flag Status:	Completed

Hello Laura,
Thank you for following up (and thanks Jeff and Emily for relaying the message).
I appreciate the clarification.
Katie

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Wednesday, January 17, 2024 11:19 AM
To: Katie Tucker <ktucker@pstlaw.ca>
Cc: Bob Nickel <bnickel.energy@saugeenojibwaynation.ca>; Stevenson, Jeff <Jeff.Stevenson@cnsc-ccsn.gc.ca>; Janzen, Emily <emily.janzen@cnsc-ccsn.gc.ca>
Subject: RE: Rights Impact Assessment

Hi Kate!

Jeff and Emily mentioned that at yesterdays SON/CNSC monthly meeting, you asked for clarification on whether the Rights Impact Assessment (RIA) that Hiawatha First Nation mentioned in their DNNP intervention was completed as part of the DNNP Environmental Assessment (EA) or if it was something currently being worked on.

To clarify, no RIAs were conducted during the EA. During the EA, no specific concerns about impacts to Indigenous and/ or Treaty rights were raised by the Indigenous Nations and communities and CNSC staff's assessment was that no impacts were expected. RIAs are a newer analysis tool that have been developed and become best practice over the last few years.

Since Hiawatha First Nation more recently raised specific concerns that the construction of the DNNP and the decision on the License to Construct application may cause impacts on their Indigenous and/or Treaty rights, CNSC staff have offered to conduct collaborative RIAs. If the DNNP proceeds to a licence to construct hearing, the RIA will be included in the Commission Member Document.

Please let me know if that answers your question or if you would like to have a specific discussion on this topic.

Thank you,
Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
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From: DeCoste, Laura
Sent: Monday, January 15, 2024 4:36 PM
To: ktucker@pstlaw.ca
Cc: Bob Nickel <bnickel.energy@saugeenojibwaynation.ca>; Stevenson, Jeff <jeff.stevenson@cnsc-ccsn.gc.ca>; Martin, Marina <marina.martin@cnsc-ccsn.gc.ca>; D'Onofrio, Rebecca <rebecca.donofrio@cnsc-ccsn.gc.ca>; McLean, Kyle <kyle.mclean@cnsc-ccsn.gc.ca>; Levine, Adam <adam.levine@cnsc-ccsn.gc.ca>
Subject: RE: Rights Impact Assessment

Hi Kate!

Jeff forwarded me your questions regarding the Rights Impact Assessments for the DNNP License to Construct application. Please find a response below.

The CNSC conducts Rights Impact Assessments (RIAs) in relation to projects and regulatory processes that may impact the exercise of potential or established Indigenous and/or treaty rights. RIAs are an analytical tool that are used to collaboratively assess if there are expected to be any significant adverse impacts to Indigenous and/or Treaty rights due to a proposed project or activity. The RIA process is meant to be flexible and tailored to each specific project or decision as well as the Indigenous Nation or community that is being consulted. The goal of the RIA process is to come to a mutual understanding of the severity of any identified potential impacts on potential or established rights and interests. The CNSC has developed an approach to RIAs that is based on best practices across the Federal Government for the assessment of potential impacts to rights in relation to projects, including the Impact Assessment Agency of Canada's guidance found here: https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/guidance-assessment-potential-impacts-rights-indigenous-peoples.html

Curve Lake First Nation, Hiawatha First Nation and the Mississaugas of Scugog Island First Nation have raised specific concerns that the construction of the DNNP and the decision on the License to Construct application may cause impacts on their Indigenous and/or Treaty rights. Based on this, CNSC staff have offered to conduct collaborative RIAs to assess and document potential impacts for the License to Construct decision on their rights. This is an ongoing discussion and results of the RIAs are expected to be included in the CNSC's Commission Member Document for the Licence to Construct application, should it proceed.

CNSC staff acknowledge that the Saugeen Ojibway Nation has raised concerns regarding the possibility of waste from the DNNP being transported and stored in their territory and the potential impacts on the Saugeen Ojibway Nation's rights from that activity. CNSC staff's understanding is that OPG has not yet made a decision about where waste generated by the DNNP will be stored, should it proceed, and that is not within the scope of the decision to be made by the Commission regarding at the Licence to Construct application.

CNSC staff note that no nuclear waste will be generated from construction or during construction of the DNNP, as there is no licensed activity in the construction licence that permits nuclear materials to be on-site. OPG will be required to characterise the nuclear wastes, identify the waste streams, handling requirements and hazards, transportation and storage locations in the Licence to Operate application phase, should the DNNP proceed. As a lifecycle regulator, CNSC's regulatory requirements increase in scope as the applicant progresses through each licensing phase. CNSC will continue to evaluate and assess OPG's programs against regulatory requirements should the applicant progress through each licensing phase, including OPG's nuclear waste management program.

CNSC staff are happy to discuss the RIA process and any questions or concerns the Saugeen Ojibway Nation has further. Additionally, CNSC staff remain open to having DNNP specific meetings and discussions on waste management concerns, if the Saugeen Ojibway Nation is interested.

Thank you!
Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
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From: Katie Tucker <ktucker@pstlaw.ca>
Sent: January 11, 2024 3:16 PM
To: Stevenson, Jeff <Jeff.Stevenson@cnsc-ccsn.gc.ca>
Cc: Bob Nickel <bnickel.energy@saugeenojibwaynation.ca>
Subject: Rights Impact Assessment

Hi Jeff,
I hope you are well!
I'm writing because I'm wondering whether the CNSC would be able to share information regarding a Rights Impact Assessment in relation to the DNNP Licence to Construct application. This document is mentioned in Hiawatha First Nation's submissions to the Commission on the DNNP, and we would be interested in learning about it too.
Thanks!
Katie

From:	Bob Nickel
To:	Dormer, Natalie
Cc:	ktucker@pstlaw.ca; Levine, Adam; Stevenson, Jeff; McLean, Kyle; Martin, Marina; D'Onofrio, Rebecca; DeCoste, Laura;
Subject:	Re: Opportunity for SON review - Draft DNNP issues tracking table
Sent:	2024-03-12 6:19:33 PM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hello Natalie,

I appreciate you sending over the "Draft Issues and Concerns Table" for us to look at. I wanted to inform you that we've decided not to provide feedback on the document. We will discuss any questions or concerns we have during our monthly CNSC meetings.

Cheers,
Bob

On Thu, Feb 29, 2024 at 9:28 AM Dormer, Natalie <natalie.dormer@cnsc-ccsn.gc.ca> wrote:

> Hello all!
>
> CNSC staff have created the attached SON specific DNNP issues tracking table. The goal of the table is to include the key issues and concerns SON has raised to date related to the DNNP and information about how the CNSC and OPG have responded to the concerns. The issues tracking tables will be included as an annex to the Commission Member Document (CMD) for the Licence to Construct application, should the project proceed.
>
> If SON are interested, please review the table to confirm whether it captures all the key issues, concerns and comments raised by SON specific to the DNNP. The information included in the "OPG's Responses" column is based off of information included in OPG's documentation and/or that they have said on the record. Please let us know your views on if this information is accurate, based on your understanding.
>
> If possible, I am hoping that SON are able to complete their review and provide feedback on these documents by **March 22th.** Additionally, CNSC staff would be happy to set up a meeting to discuss the table, any of the SON's DNNP related concerns raised to date or to provide an update on the technical review of the Licence to Construct application.

Please let us know if you have any questions or concerns!

Best,

Natalie

Natalie Dormer (she/her/elle)

Policy Officer

Indigenous and Stakeholeder Relations Division (ISRD)

Canadian Nuclear Safety Commission

natalie.dormer@cnsc-ccsn.gc.ca / Cell : 343-540-7411

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--

Bob Nickel | Energy Associate

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T: 519.534.5507
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saugeenojibwaynation.ca

From:	DeCoste, Laura
To:	Bob Nickel
Cc:	ktucker@pstlaw.ca; Stevenson, Jeff; McLean, Kyle; D'Onofrio, Rebecca; Martin, Marina;
Subject:	Opportunity for SON review - overview of DNNP specific engagement with SON to be included in DNNP Consultation Report
Sent:	2024-03-28 7:48:00 AM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Bob!

I'm reaching out to you to provide SON with an opportunity to review CNSC's documentation and to provide information about the reporting process for the DNNP Licence to Construct application. Please note that all the information included in this email regarding the approach and timelines are dependent on the Commission's decision on the January 2024 DNNP hearing on the applicability of the EA to OPG's selected technology and are subject to change based on what the Commission decides.

Opportunity for review of engagement overview:
Please find attached a draft overview the CNSC's engagement conducted with SON related to the DNNP. This information will be included in CNSC staff's submissions to the Commission for the DNNP Licence to Construct application, should the project proceed. I know SON decided to not provide feedback on the DNNP draft issues and concerns table and instead discuss questions and concerns through monthly meetings. However I wanted to also provide the opportunity for SON to review the attached document and share your views on whether it accurately reflects engagement with the CNSC to date in relation to the DNNP Licence to Construct and the key concerns raised by SON. Please feel free to provide any comments or edits in the document, using tracked changes. CNSC staff also welcome any feedback SON has on OPG's and/or CNSC's engagement to date with regards to the DNNP Licence to Construct, to be considered in the CNSC's assessment and included in the report. If possible, please provide any feedback by April 18, 2024.

Alternatively, CNSC staff are open to walking through the document or discussing any comments or concerns you may have during a meeting, similar to the approach taken for the issues tracking table.

Approach to reporting on Indigenous Consultation and engagement for the DNNP Licence to Construct:
In the past, CNSC staff's content and recommendations with regards to Indigenous Consultation and Engagement has been included in a section of staff's Commission

Member Document (CMD) for a licensing application. However, due to the amount and complexity of the information, collaborative nature of the development of the content and importance of this topic, in relation to the DNNP Licence to Construct hearing, CNSC staff are taking the approach of having a separate Consultation Report for the DNNP Licence to Construct application. The Consultation Report along with the CMD, where the report will be referenced, will form part of the CNSC's submissions and recommendations to the Commission. This report will be included as a supporting document for the Commission hearing and a summary of this report will be included in the CMD. Key correspondence (i.e notifications, updates, letters with each Nation) will be included in an appendix of the Consultation Report. At this time, both the CNSC staff Consultation Report and CNSC staff's CMD are tentatively scheduled to be posted publicly on June 18th, 2024. Please let me know if you have any concerns or questions with this new reporting approach.

Please let us know if you have any questions and we would be happy to discuss further, thank you!

Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
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Intérimaire Agente principale des politiques, Division des relations avec les Autochtones et les parties intéressées
Commission canadienne de sûreté nucléaire
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From:	DeCoste, Laura
To:	ktucker@pstlaw.ca; Bob Nickel;
Cc:	Stevenson, Jeff; McLean, Kyle; D'Onofrio, Rebecca; Martin, Marina; Levine, Adam; Simon, Nicole;
Subject:	RE: Opportunity for SON review - overview of DNNP specific engagement with SON to be included in DNNP Consultation Report
Sent:	2024-04-04 2:45:00 PM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Katie!

Thank you reaching out and flagging SON's ongoing concerns regarding JRP recommendations #52 and #53 and OPG's waste management plans for the DNNP. Please find a response to these concerns below from our Subject Matter Experts (SMEs) at the CNSC. However, I think it would be really beneficial to discuss this topic at a meeting with our SMEs on the project. CNSC staff can then learn more about SON's concerns and provide information about our regulatory requirements, expectations for OPG at each potential licensing stage and details about what CNSC staff are reviewing at this stage of the DNNP. I know Marina and Rebecca are working to organize a meeting with SON to discuss CNSC's approach to implementing UNDRIP, and other related topics of interest/concern to the SON, if you are open to it we could add this topic to that meeting as well?

CNSC Staff response:
CNSC staff note that the Government of Canada response to the JRP's recommendations state:

> "#52 *The Government of Canada accepts the intent of this recommendation to the extent that it is the responsibility of waste owners for managing and funding the safe and secure operation of their own wastes. Canada's 1996 Radioactive Waste Policy Framework states that the owners of radioactive waste are responsible for developing and implementing solutions, including all costs associated with safely and securely managing their wastes.*
>
> "#53 *The Government of Canada accepts the intent of this recommendation to the extent that it is the responsibility of waste owners for managing and funding the safe and secure operation of their own wastes, in accordance with CNSC's regulatory requirements. Canada's 1996 Radioactive Waste Policy Framework states that the owners of radioactive waste are responsible for developing and implementing solutions, including all costs associated with safely and securely managing their wastes."*

CNSC staff are considering SON's comments and concerns related to the management of radioactive wastes for the DNNP. OPG will be required to address all commitments under JRP recommendations #52 and #53—OPG has elected to tie its implementation of these commitments to DNNP Commitment D-C-9.1 *Radioactive Waste Management Strategy*. OPG has provided a preliminary Waste Management Strategy to CNSC staff as part of its

Licence to Construct application, including a preliminary discussion of its proposed radioactive waste strategy for low-, intermediate-, and high-level wastes, and CNSC staff are currently reviewing this submission as part of our technical review. At the Licence to Construct Stage, CNSC staff's review is primarily focused on hazardous wastes, but will also include a review of OPG's proposed handling of nuclear wastes in any subsequent lifecycle stage, based the information provided to date. CNSC staff will present an overview of its review of the DNNP Waste Management strategy in Staff's Commission Member Document, which will be available for review by the SON and other interveners in advance of your own submissions to the Commission, should the project proceed. CNSC staff are also happy to meet with SON and its representatives to discuss this topic and CNSC staff's requirements/expectations of OPG to meet these JRP recommendations and review and assessment process.

CNSC staff note that OPG has yet to provide a detailed management plan for the handling and storage of radioactive wastes from the DNNP as no nuclear materials or activities with nuclear materials are authorised at the current site preparation stage nor were any activities requested as part of a potential Licence to Construct. As a lifecycle regulator, CNSC's regulatory requirements increase in scope as the applicant progresses through each licensing phase.

OPG is expected to have a complete and detailed nuclear waste management program prior to any consideration of a potential Licence to Operate application. CNSC staff expect OPG to be actively working on the nuclear Waste Management program for the DNNP, which would include engaging with Indigenous Nations and communities, including SON.

We continue to encourage OPG to work with SON to meaningfully address the SON's concerns with respect to radioactive waste management at the DNNP. As well, CNSC staff remain open to working with the SON to address concerns, including having dedicated discussions with the SON on this topic

Thank you,

Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
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From: Katie Tucker <ktucker@pstlaw.ca>
Sent: Wednesday, April 3, 2024 3:35 PM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>; bnickel.energy <bnickel.energy@saugeenojibwaynation.ca>
Cc: Stevenson, Jeff <Jeff.Stevenson@cnsc-ccsn.gc.ca>; McLean, Kyle <kyle.mclean@cnsc-ccsn.gc.ca>; D'Onofrio, Rebecca <rebecca.donofrio@cnsc-ccsn.gc.ca>; Martin, Marina

<marina.martin@cnsc-ccsn.gc.ca>
Subject: RE: Opportunity for SON review - overview of DNNP specific engagement with SON to be included in DNNP Consultation Report

Hi Laura,

Thank you for sharing the SON "Sections of DNNP Consultation Report" with us. I am writing to flag a serious, ongoing issue.

In the March 2024 section of the report there is a reference to SON's concerns that recommendations #52 and #53 from the Joint Review Panel (JRP) are not being honored. You have included a comment that a response to SON's concerns is being prepared. On the following page, however, in the section entitled "CNSC staff's responses", it says:

> CNSC staff note that OPG has not yet made a decision about where waste generated by the DNNP will be stored, should it proceed, and that is not within the scope of the decision to be made by the Commission regarding the Licence to Construct application.

Unless this statement is subject to change following CNSC staff's response to SON on this issue, it appears that SON's concerns are not being considered meaningfully. Certainly, the conclusion that the "concerns raised by Saugeen Ojibway Nation have been adequately addressed" is false.

SON's position is that the JRP's recommendations regarding the storage of DNNP's radioactive waste, which were accepted in intent by the Government of Canada, are an integral part of the environmental assessment conclusions. It is not up to the proponent to decide to disregard these criteria that SON worked hard to have included in the JRP's report.

CNSC staff have indicated that the planning for waste will be considered at the licence to operate stage. SON does not accept this position. The plan for the storage of radioactive waste is a fundamental consideration and is not a matter to be considered at a later date. That the JRP addressed this issue in its environmental assessment report supports this position. In fact, it is as a result of SON's intervention at the JRP hearings that these recommendations were included in the report. CNSC staff should be highlighting these issues for the Commission rather than dismissing the issue as a matter for another day to be decided by OPG.

OPG's radioactive waste has been transported to and stored on SON's territory for decades without consultation or consent. That this infringement of SON's rights and interests is compounded on a near daily basis is unacceptable. The DNNP is an entirely new project, one that will rely on lightly enriched uranium that has yet to be used in Canada's nuclear reactors. The ongoing assumption that SON will continue to accept OPG's waste indefinitely without SON consent and without the resolution of nuclear legacy issues in SON Territory is not a reasonable or sound position from a planning or regulatory perspective.

Regards,
Katie

Katie Tucker (She/Her)
Counsel to the firm

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C 514.213.4517 · ktucker@pstlaw.ca · www.pstlaw.ca

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Thursday, March 28, 2024 7:49 AM
To: bnickel.energy <bnickel.energy@saugeenojibwaynation.ca>
Cc: Katie Tucker <ktucker@pstlaw.ca>; Stevenson, Jeff <Jeff.Stevenson@cnsc-ccsn.gc.ca>; McLean, Kyle <kyle.mclean@cnsc-ccsn.gc.ca>; D'Onofrio, Rebecca <rebecca.donofrio@cnsc-ccsn.gc.ca>; Martin, Marina <marina.martin@cnsc-ccsn.gc.ca>
Subject: Opportunity for SON review - overview of DNNP specific engagement with SON to be included in DNNP Consultation Report

Hi Bob!

I'm reaching out to you to provide SON with an opportunity to review CNSC's documentation and to provide information about the reporting process for the DNNP Licence to Construct application. Please note that all the information included in this email regarding the approach and timelines are dependent on the Commission's decision on the January 2024 DNNP hearing on the applicability of the EA to OPG's selected technology and are subject to change based on what the Commission decides.

Opportunity for review of engagement overview:
Please find attached a draft overview the CNSC's engagement conducted with SON related to the DNNP. This information will be included in CNSC staff's submissions to the Commission for the DNNP Licence to Construct application, should the project proceed. I know SON decided to not provide feedback on the DNNP draft issues and concerns table and instead discuss questions and concerns through monthly meetings. However I wanted to also provide the opportunity for SON to review the attached document and share your views on whether it accurately reflects engagement with the CNSC to date in relation to the DNNP Licence to Construct and the key concerns raised by SON. Please feel free to provide any comments or edits in the document, using tracked changes. CNSC staff also welcome any feedback SON has on OPG's and/or CNSC's engagement to date with regards to the DNNP Licence to Construct, to be considered in the CNSC's assessment and included in the report. If possible, please provide any feedback by April 18, 2024.

Alternatively, CNSC staff are open to walking through the document or discussing any comments or concerns you may have during a meeting, similar to the approach taken for the issues tracking table.

Approach to reporting on Indigenous Consultation and engagement for the DNNP Licence to Construct:
In the past, CNSC staff's content and recommendations with regards to Indigenous Consultation and Engagement has been included in a section of staff's Commission Member Document (CMD) for a licensing application. However, due to the amount and complexity of the information, collaborative nature of the development of the content and importance of this topic, in relation to the DNNP Licence to Construct hearing, CNSC staff are taking the approach of having a separate Consultation Report for the DNNP Licence to Construct application. The Consultation Report along with the CMD, where the report will be referenced, will form part of the CNSC's submissions and recommendations to the Commission. This report will be included as a supporting document for the Commission hearing and a summary of this report will be included in the CMD. Key correspondence (i.e notifications, updates, letters with each Nation) will be included in an appendix of the Consultation Report. At this time, both the CNSC staff Consultation Report and CNSC staff's CMD are tentatively scheduled to be posted publicly on June 18th, 2024. Please let me know if you have any concerns or questions with this new reporting approach.

Please let us know if you have any questions and we would be happy to discuss further, thank you!

Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
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laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Intérimaire Agente principale des politiques, Division des relations avec les Autochtones et les parties intéressées
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laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From:	Katie Tucker
To:	DeCoste, Laura; bnickel.energy;
Cc:	Levine, Adam; Stevenson, Jeff; McLean, Kyle; Martin, Marina; D'Onofrio, Rebecca; Alex Monem;
Subject:	RE: Opportunity for SON review - Draft DNNP issues tracking table
Attachments:	2024 05 24 E-DOCS-#7212870-v2-Draft_Issues_and_Concerns_Table_SON_DNNP_May 23 2024_SON Comments.docx;2024 05 24 - For SON Review_Sections of DNNP Consultation Report_May 23 2024_SON Comments.docx;
Sent:	2024-06-07 4:38:31 PM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hello Laura,

Thank you for sharing these consultation and engagement reports with us regarding the proposed DNNP project. Attached are these same documents with SON's comments and proposed track changes. Please let me know if you would like to discuss this further.

Regards, Katie

Katie Tucker (She/Her)
Counsel to the firm

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From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Thursday, May 23, 2024 3:06 PM
To: Katie Tucker <ktucker@pstlaw.ca>; bnickel.energy <bnickel.energy@saugeenojibwaynation.ca>
Cc: Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; Stevenson, Jeff <Jeff.Stevenson@cnsc-ccsn.gc.ca>; McLean, Kyle <kyle.mclean@cnsc-ccsn.gc.ca>; Martin, Marina <marina.martin@cnsc-ccsn.gc.ca>; D'Onofrio, Rebecca <rebecca.donofrio@cnsc-ccsn.gc.ca>
Subject: RE: Opportunity for SON review - Draft DNNP issues tracking table

Hi Katie!

Please find attached the updated versions of the two documents. Please let us know if you have any comments or edits by June 7th.

CNSC staff have made updates in tracked changes to both documents based on feedback received, internal reviews and OPG's input in the "proponent response" column of the issues tracking table. We have also made edits to the issues tracking table and consultation report to reflect SON's views that the CNSC has not meaningfully considered or addressed their concerns regarding DNNP waste management. Please feel free to provide any feedback to ensure these views are accurately reflected. CNSC staff remain committed to working with SON, and OPG as appropriate, to address and discuss these concerns.

SON is also welcome to provide any feedback on the CNSCs approach to consultation

Please let me know if you have any questions.

Thank you,

Laura DeCoste
[she, her, elle]

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laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

From: Katie Tucker <ktucker@pstlaw.ca>
Sent: Thursday, May 23, 2024 1:39 PM
To: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>; bnickel.energy <bnickel.energy@saugeenojibwaynation.ca>
Cc: Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; Stevenson, Jeff <Jeff.Stevenson@cnsc-ccsn.gc.ca>; McLean, Kyle <kyle.mclean@cnsc-ccsn.gc.ca>; Martin, Marina <marina.martin@cnsc-ccsn.gc.ca>; D'Onofrio, Rebecca <rebecca.donofrio@cnsc-ccsn.gc.ca>
Subject: RE: Opportunity for SON review - Draft DNNP issues tracking table

Hi Laura,
Thanks for flagging this for us. We would definitely like to receive an updated copy of these documents now.
Best, Katie

Katie Tucker (She/Her)
Counsel to the firm

PAPE SALTER TEILLET LLP BARRISTERS AND SOLICITORS

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Jeff <Jeff.Stevenson@cnsc-ccsn.gc.ca>; McLean, Kyle <kyle.mclean@cnsc-ccsn.gc.ca>; Martin, Marina <marina.martin@cnsc-ccsn.gc.ca>; D'Onofrio, Rebecca <rebecca.donofrio@cnsc-ccsn.gc.ca>
Subject: RE: Opportunity for SON review - Draft DNNP issues tracking table

Hi Bob!

I just wanted to touch-base on the DNNP issues tracking table and consultation report. We have made some edits to the documents based on feedback, internal reviews and OPG has provided input on the issues table "proponent response" column.

SON confirmed previously (email below) that they would not provide feedback on the issues tracking table but would discuss concerns and comments at CNSC meetings instead. I just wanted to double check whether you would like to receive an updated copy of these documents now for your awareness? Alternatively, the documents will be posted publicly on June 18th for review and comment through the intervention process.

We are happy to chat about the documents, continue discussing the concerns SON has regarding the DNNP or provide an update on our technical review of the Licence to Construct application and next steps in the regulatory process at any point.

Thanks,
Laura DeCoste
[she, her, elle]

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From: Bob Nickel <bnickel.energy@saugeenojibwaynation.ca>
Sent: Tuesday, March 12, 2024 6:19 PM
To: Dormer, Natalie <natalie.dormer@cnsc-ccsn.gc.ca>
Cc: ktucker@pstlaw.ca; Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; Stevenson, Jeff <Jeff.Stevenson@cnsc-ccsn.gc.ca>; McLean, Kyle <kyle.mclean@cnsc-ccsn.gc.ca>; Martin, Marina <marina.martin@cnsc-ccsn.gc.ca>; D'Onofrio, Rebecca <rebecca.donofrio@cnsc-ccsn.gc.ca>; DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Subject: Re: Opportunity for SON review - Draft DNNP issues tracking table

Hello Natalie,

I appreciate you sending over the "Draft Issues and Concerns Table" for us to look at. I wanted to inform you that we've decided not to provide feedback on the

Bob

On Thu, Feb 29, 2024 at 9:28 AM Dormer, Natalie <natalie.dormer@cnsc-ccsn.gc.ca> wrote:

> Hello all!
>
> CNSC staff have created the attached SON specific DNNP issues tracking table. The goal of the table is to include the key issues and concerns SON has raised to date related to the DNNP and information about how the CNSC and OPG have responded to the concerns. The issues tracking tables will be included as an annex to the Commission Member Document (CMD) for the Licence to Construct application, should the project proceed.
>
> If SON are interested, please review the table to confirm whether it captures all the key issues, concerns and comments raised by SON specific to the DNNP. The information included in the "OPG's Responses" column is based off of information included in OPG's documentation and/or that they have said on the record. Please let us know your views on if this information is accurate, based on your understanding.
>
> If possible, I am hoping that SON are able to complete their review and provide feedback on these documents by **March 22th.** Additionally, CNSC staff would be happy to set up a meeting to discuss the table, any of the SON's DNNP related concerns raised to date or to provide an update on the technical review of the Licence to Construct application.
>
> Please let us know if you have any questions or concerns!
>
> Best,
> Natalie
>
> **Natalie Dormer (she/her/elle)**
>
> Policy Officer
> Indigenous and Stakeholeder Relations Division (ISRD)
> Canadian Nuclear Safety Commission
> natalie.dormer@cnsc-ccsn.gc.ca / Cell : 343-540-7411
>
> Agente en politiques
> Division des relations avec les Autochtones et les parties intérssées
> Commission canadienne de sûreté nucléaire
> natalie.dormer@cnsc-ccsn.gc.ca / Cell : 343-540-7411

--

T: 519.534.5507
10129 Hwy 6
Georgian Bluffs, ON

saugeenojibwaynation.ca

B.10 Correspondence with Six Nations of the Grand River

From:	Dormer, Natalie
To:	lonnybomberry@sixnations.ca; tayler.hill@sixnations.ca; nativelandsltd@gmail.com; tanyahill-montour@sixnations.ca; lrcs@sixnations.ca; lrluo2@sixnations.ca; laurenjones@sixnations.ca; wsma@sixnations.ca; adnb@sixnations.ca; dawnrussell@sixnations.ca;
Cc:	Levine, Adam; DeCoste, Laura; McCavitt, Keely;
Subject:	Opportunity for Six Nations of the Grand River's review - Draft DNNP issues tracking table
Sent:	2024-02-29 9:25:35 AM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hello everyone,

CNSC staff have created the attached Six Nations of the Grand River specific DNNP issues tracking table. The goal of the table is to include the key issues and concerns Six Nations of the Grand River has raised to date related to the DNNP and information about how the CNSC and OPG have responded to the concerns. The issues tracking tables will be included as an annex to the Commission Member Document (CMD) for the Licence to Construct application, should the project proceed.

If Six Nations of the Grand River is interested, please review the table to confirm whether it captures all the key issues, concerns and comments raised by Six Nations of the Grand River specific to the DNNP. The information included in the “OPG’s Responses” column is based off of information included in OPG’s documentation and/or that they have said on the record. Please let us know your views on if this information is accurate, based on your understanding.

If possible, I am hoping that Six Nations of the Grand River are able to complete their review and provide feedback on these documents by **March 29th.** Additionally, CNSC staff would be happy to set up a meeting to discuss any of Six Nations of the Grand River DNNP related concerns raised to date or to provide an update on the technical review of the Licence to Construct application.

Please let us know if you have any questions or concerns!

Best,
Natalie

Natalie Dormer (she/her/elle)

Policy Officer
Indigenous and Stakeholeder Relations Division (ISRD)
Canadian Nuclear Safety Commission
natalie.dormer@cnsc-ccsn.gc.ca / Cell : 343-540-7411

Agente en politiques
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Commission canadienne de sûreté nucléaire
natalie.dormer@cnsc-ccsn.gc.ca / Cell : 343-540-7411

From:	DeCoste, Laura
To:	lonnybomberry@sixnations.ca; tayler.hill@sixnations.ca; nativelandsltd@gmail.com; tanyahill-montour@sixnations.ca; lrcs@sixnations.ca; lrluo2@sixnations.ca; laurenjones@sixnations.ca; wsma@sixnations.ca; adnb@sixnations.ca; dawnrussell@sixnations.ca;
Subject:	Opportunity for Six Nations of the Grand River review - overview of DNNP specific engagement with Six Nations of the Grand River
Sent:	2024-03-27 3:14:00 PM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi all!

I'm reaching out to you to provide an opportunity to review CSNC's documentation and information about the reporting process for the DNNP Licence to Construct application. Please note that all the information included in this email regarding the approach and timelines are dependent on the Commission's decision on the January 2024 DNNP hearing on the applicability of the EA to OPG's selected technology and are subject to change based on what the Commission decides.

Opportunity for review of engagement overview for the DNNP:
Please find attached a draft overview the engagement conducted with SNGR related to the DNNP. This information will be included in CNSC staff's submissions to the Commission for the DNNP Licence to Construct application, should the project proceed. CNSC staff are requesting that SNGR review the attached document to confirm whether it accurately reflects the engagement with SNGR to date in relation to the DNNP Licence to Construct and the key concerns raised by SNGR. I've also attached the draft issues tracking table, shared with SNGR on February 29th – please let me know whether it captures all the key issues, concerns and comments raised by SNGR specific to the DNNP or if you have any questions about this! Please provide any comments or edits in either document, using tracked changes.

CNSC staff also welcome any feedback SNGR has on OPG's and/or CNSC's engagement and consultation to date with regards to the DNNP Licence to Construct, to be considered in the CNSC's assessment and included in the report. If possible, please provide any feedback by April 18, 2024.

Approach to reporting on Indigenous Consultation and engagement for the DNNP Licence to Construct:
In the past, CNSC staff content and recommendations with regards to Indigenous Consultation and Engagement has been included in a section of staff's Commission Member Document (CMD) for a licensing application. However, due to the amount and

complexity of the information, collaborative nature of the development of the content and importance of this topic, in relation to the DNNP Licence to Construct hearing, CNSC staff are taking the approach of having a separate Consultation Report for the DNNP Licence to Construct application. The Consultation Report along with the CMD, where the report will be referenced, will form part of the CNSC's submissions and recommendations to the Commission. This report will be included as a supporting document for the Commission hearing and a summary of this report will be included in the CMD. Key correspondence (i.e notifications, updates, letters with each Nation) will be included in an appendix of the Consultation Report. At this time, both the CNSC staff Consultation Report and CNSC staff's CMD are tentatively scheduled to be posted publicly on June 18th, 2024. Please let me know if you have any concerns or questions with this new reporting approach.

Please let us know if you have any questions or concerns about this approach and process and we would be happy to discuss further. Also happy to set up a meeting with SNGR to discuss any other topics of interest!

Thank you,

Laura DeCoste
[she, her, elle]

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Commission canadienne de sûreté nucléaire
laura.decoste@cnsc-ccsn.gc.ca | Tél: 343-571-6491

B.11 Correspondence with Métis Nation of Ontario

From:	Dormer, Natalie
To:	JesseF@metisnation.org; ethanr@metisnation.org; MaryM@metisnation.org;
Cc:	Levine, Adam; DeCoste, Laura; McCavitt, Keely;
Subject:	Opportunity for MNO review - DNNP Issues tracking table
Sent:	2024-02-29 9:26:45 AM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hello!

CNSC staff have created the attached MNO specific DNNP issues tracking table. The goal of the table is to include the key issues and concerns MNO has raised to date related to the DNNP and information about how the CNSC and OPG have responded to the concerns. The issues tracking tables will be included as an annex to the Commission Member Document (CMD) for the Licence to Construct application, should the project proceed

If MNO is interested, please review the table to confirm whether it captures all the key issues, concerns and comments raised by MNO specific to the DNNP. The information included in the "OPG's Responses" column is based off of information included in OPG's documentation and/or that they have said on the record. Please let us know your views on if this information is accurate, based on your understanding.

If possible, I am hoping that MNO are able to complete their review and provide feedback on these documents by **March 29th**. Additionally, CNSC staff would be happy to set up a meeting to discuss any of MNO's DNNP related concerns raised to date or to provide an update on the technical review of the Licence to Construct application.

Please let us know if you have any questions or concerns!

Best,
Natalie

Natalie Dormer (she/her/elle)

Policy Officer
Indigenous and Stakeholeder Relations Division (ISRD)
Canadian Nuclear Safety Commission
natalie.dormer@cnsc-ccsn.gc.ca / Cell : 343-540-7411

Agente en politiques
Division des relations avec les Autochtones et les parties intérssées
Commission canadienne de sûreté nucléaire
natalie.dormer@cnsc-ccsn.gc.ca / Cell : 343-540-7411

From:	Jennifer Christoff
To:	McCavitt, Keely; Dormer, Natalie;
Cc:	Levine, Adam; DeCoste, Laura; Mary MacDougall;
Subject:	RE: Opportunity for MNO review - DNNP Issues tracking table
Sent:	2024-03-22 9:01:08 AM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Good morning,

After providing MNO's Region 8 Consultation Committee with a few weeks to review the DNNP Issues tracking table, no additional comments or concerns have been brought forward.

Regarding a DNNP-focused meeting, Region 8 has recently attended a meeting with OPG as a follow-up to their January 23-25 Hearing intervention. The MNO is currently in the middle of elections; perhaps a DNNP update meeting with CNSC can be discussed once elections are finalized in early May.

Best regards,
Jennifer Christoff (she/her)
Nuclear Consultation Advisor
Lands, Resources and Consultations (LRC) Branch
Métis Nation of Ontario
Barrie, ON L4N 5R7
E: JenniferC@metisnation.org
W: www.metisnation.org

From: McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>
Sent: Thursday, February 29, 2024 10:39 AM
To: Jennifer Christoff <JenniferC@metisnation.org>
Subject: FW: Opportunity for MNO review - DNNP Issues tracking table

Hello Jenn,
I hope you are having a good week so far. Please see below an email relating to the DNNP issues tracking for the MNO.

Looking forward to our meeting this afternoon!
Take care

Keely

From: Dormer, Natalie <natalie.dormer@cnsc-ccsn.gc.ca>
Sent: Thursday, February 29, 2024 9:27 AM
To: JesseF@metisnation.org; ethanr@metisnation.org; MaryM@metisnation.org
Cc: Levine, Adam <Adam.Levine@cnsc-ccsn.gc.ca>; DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>; McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>
Subject: Opportunity for MNO review - DNNP Issues tracking table

Hello!

If MNO is interested, please review the table to confirm whether it captures all the key issues, concerns and comments raised by MNO specific to the DNNP. The information included in the "OPG's Responses" column is based off of information included in OPG's documentation and/or that they have said on the record. Please let us know your views on if this information is accurate, based on your understanding.

If possible, I am hoping that MNO are able to complete their review and provide feedback on these documents by **March 29th**. Additionally, CNSC staff would be happy to set up a meeting to discuss any of MNO's DNNP related concerns raised to date or to provide an update on the technical review of the Licence to Construct application.

Please let us know if you have any questions or concerns!

Best,
Natalie

Natalie Dormer (she/her/elle)

Policy Officer
Indigenous and Stakeholeder Relations Division (ISRD)
Canadian Nuclear Safety Commission
natalie.dormer@cnsc-ccsn.gc.ca / Cell : 343-540-7411

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Division des relations avec les Autochtones et les parties intérssées
Commission canadienne de sûreté nucléaire
natalie.dormer@cnsc-ccsn.gc.ca / Cell : 343-540-7411

From:	DeCoste, Laura
To:	Jennifer Christoff
Cc:	Mary MacDougall; Ethan Roy; McCavitt, Keely;
Subject:	Opportunity for MNO review - overview of DNNP specific engagement with MNO to be included in DNNP Consultation Report
Sent:	2024-03-28 7:38:00 AM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Jennifer!

I'm reaching out to you to provide an opportunity to review CNSC's documentation and to provide information about the reporting process for the DNNP Licence to Construct application. Please note that all the information included in this email regarding the approach and timelines are dependent on the Commission's decision on the January 2024 DNNP hearing on the applicability of the EA to OPG's selected technology and are subject to change based on what the Commission decides.

Opportunity for review of engagement overview related to the DNNP:
Please find attached a draft overview the engagement conducted with MNO related to the DNNP. This information will be included in CNSC staff's submissions to the Commission for the DNNP Licence to Construct application, should the project proceed. CNSC staff are requesting that MNO review the attached document to confirm whether it accurately reflects the engagement with MNO to date in relation to the DNNP Licence to Construct and the key concerns raised by MNO. Please provide any comments or edits in the document, using tracked changes.

CNSC staff also welcome any feedback MNO has on OPG's and/or CNSC's engagement and consultation to date with regards to the DNNP Licence to Construct, to be considered in the CNSC's assessment and included in the report. If possible, please provide any feedback by April 18, 2024.

Approach to reporting on Indigenous Consultation and engagement for the DNNP Licence to Construct:
In the past, CNSC staff content and recommendations with regards to Indigenous Consultation and Engagement has been included in a section of staff's Commission Member Document for a licensing application. However, due to the amount and complexity of the information, collaborative nature of the development of the content and importance of this topic, in relation to the DNNP Licence to Construct hearing, CNSC staff are taking the approach of having a separate Consultation Report for the DNNP Licence to Construct application. The Consultation Report along with the CMD, where the report will be referenced, will form part of the CNSC's submissions and recommendations

to the Commission. This report will be included as a supporting document for the Commission hearing and a summary of this report will be included in the CMD. Key correspondence (i.e notifications, updates, letters with each Nation) will be included in an appendix of the Consultation Report. At this time, both the CNSC staff Consultation Report and CNSC staff's CMD are tentatively scheduled to be posted publicly on June 18th, 2024. Please let me know if you have any concerns or questions with this new reporting approach.

Please let us know if you have any questions and we would be happy to discuss further, thank you!

Laura DeCoste
[she, her, elle]

Acting Senior Policy Officer, Indigenous and Stakeholder Relations Division
Canadian Nuclear Safety Commission
laura.decoste@cnsc-ccsn.gc.ca | Tel: 343-571-6491

Intérimaire Agente principale des politiques, Division des relations avec les Autochtones et les parties intéressées
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From:	Jennifer Christoff
To:	DeCoste, Laura
Cc:	Mary MacDougall; Ethan Roy; McCavitt, Keely;
Subject:	RE: Opportunity for MNO review - overview of DNNP specific engagement with MNO to be included in DNNP Consultation Report
Attachments:	For MNO Review_Sections of DNNP Consultation Report.docx
Sent:	2024-04-11 1:11:21 PM

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Laura,

My apologies for the delay in responding with feedback on the DNNP Consultation Report.

As Region 8 is non-rights-bearing, we wanted to ensure that the language in the "Background on the Métis Nation of Ontario and Relationship with the CNSC" section accurately and appropriately reflected the situation of the Region 8 Consultation Committee and the citizens they represent. We have made our changes to only one paragraph using tracked changes within the attached document.

Thank you for this opportunity!

Kindly,
Jennifer Christoff (she/her)
Nuclear Consultation Advisor
Lands, Resources and Consultations (LRC) Branch
Métis Nation of Ontario
Barrie, ON L4N 5R7
E: JenniferC@metisnation.org
W: www.metisnation.org

From: DeCoste, Laura <laura.decoste@cnsc-ccsn.gc.ca>
Sent: Thursday, March 28, 2024 7:39 AM
To: Jennifer Christoff <JenniferC@metisnation.org>
Cc: Mary MacDougall <MaryM@metisnation.org>; Ethan Roy <EthanR@metisnation.org>; McCavitt, Keely <keely.mccavitt@cnsc-ccsn.gc.ca>
Subject: Opportunity for MNO review - overview of DNNP specific engagement with MNO to be included in DNNP Consultation Report

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Please let us know if you have any questions and we would be happy to discuss further, thank you!

Laura DeCoste
[she, her, elle]

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B.12 Correspondence with the Mohawks of the Bay of Quinte

From:	DeCoste, Laura
To:	consultation@mbq-tmt.org
Subject:	Follow up to today's phone call with the Canadian Nuclear Safety Commission
Sent:	2023-10-26 11:51:00 AM

Hi Cassie!

It was nice talking to you today. As mentioned, I'm following up with this email to provide additional information about the Canadian Nuclear Safety Commission (CNSC) and the ongoing regulatory process for the Darlington New Nuclear Project. The CNSC is Canada's nuclear regulatory and we regulate the use of nuclear energy and materials to protect health, safety, security and the environment. We are currently conducting a regulatory process to consider Ontario Power Generation's (OPG) application for a licence to construct a small modular reactor, known as the Darlington New Nuclear Project in the Municipality of Clarington, Ontario.

I am reaching out to see whether Mohawks of the Bay of Quinte is interested in learning more about the CNSC, the regulatory process for the DNNP and opportunities to get involved in the process.

Additionally, the CNSC is also hosting a virtual public webinar on the DNNP on **October 31st from 11:00 am to 12:30 pm** which will provide an update on the regulatory review and public hearings for the Darlington New Nuclear Project. If you are interested in attending, **please register here:** https://us06web.zoom.us/webinar/register/WN_81Er7rSxQb6uNJCVCMEWqQ.

If you are interested in learning more about the CNSC or the DNNP, please let me know and I would be happy to set up a meeting!

Thank you,

Laura DeCoste
[she, her, elle]

Policy Officer, Indigenous and Stakeholder Relations Division
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