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A Licence Renewal

Ontario Power Generation Inc.

Darlington New Nuclear Project

Commission Public Hearing

Scheduled for:

June 9-10, 2021

Submitted by:

CNSC Staff

Un renouvellement de permis

Ontario Power Generation Inc.

Projet de la nouvelle centrale nucléaire de Darlington

Audience publique de la Commission

Prévue pour :

9 et 10 juin 2021

Soumise par :

Le personnel de la CCSN

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Summary

This CMD presents information about the following matters of regulatory interest with respect to the Ontario Power Generation (OPG) Darlington New Nuclear Project (DNNP):

CNSC staff's review and assessment of OPG's application to renew the licence to prepare site (PRSL 18.00/2022) for a new nuclear generating station at the Darlington Nuclear site.

CNSC staff recommend that the Commission take the following actions:

- Renew, pursuant to section 24 of the *Nuclear Safety and Control Act*, the power reactor site preparation licence, with amendments PRSL 18.00/2031, authorizing OPG to carry out the activities listed in Part IV of the proposed licence from August 18, 2021, to August 17, 2031.
- Delegate authority as set out in section 5.8 of this CMD.

The following items are attached:

- Proposed licence changes
- Proposed licence PRSL 18.00/2031
- Draft licence conditions handbook
- Current PRSL 18.00/2022

Résumé

Le présent CMD fournit de l'information sur un ensemble de questions d'ordre réglementaire concernant le projet de nouvelle centrale nucléaire de Darlington d'Ontario Power Generation Inc. (OPG) :

Examen et évaluation par le personnel de la CCSN de la demande de renouvellement de permis d'OPG en vue de la préparation de l'emplacement (PRSL 18.00/2022) pour la construction d'une nouvelle centrale nucléaire au complexe nucléaire de Darlington.

Le personnel de la CCSN recommande à la Commission de prendre les mesures suivantes :

- Renouveler, conformément à l'article 24 de *la Loi sur la sûreté et la réglementation nucléaires* et avec modifications, le permis de préparation de l'emplacement du réacteur nucléaire PRSL 18.00/2031, autorisant OPG à mener, du 18 août 2021 au 17 août 2031, les activités énumérées à la partie IV du permis proposé.
- Déléguer les pouvoirs comme il est énoncé à la section 5.8 du présent CMD.

Les pièces suivantes sont jointes:

- Changements de permis proposés
- Permis proposé PRSL 18.00/2031
- L'ébauche des conditions du permis
- Permis de préparation de l'emplacement actuel PRSL 18.00/2022

Signed/signé le

8 March 2021

Ducros, Caroline

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

Ontario Power Generation (OPG) is the operator of the Darlington Nuclear Generating Station and the licensee for the Darlington New Nuclear Project (DNNP). OPG was first issued a Canadian Nuclear Safety Commission (CNSC) licence to prepare site in 2012 following the completion of an Environment Assessment (EA) conducted by a Joint Review Panel (JRP) under the *Canadian Environmental Assessment Act (*CEAA*)* 1992 [1].

During the current licence term OPG has not initiated any licensed activities and has focused its efforts on addressing the recommendations stemming from the JRP review process. The JRP recommendations are included in this Commission Member Document (CMD) as Appendix E. In June 2020, OPG submitted an application [2] to renew its licence (PRSL 18.00/2022) [3], requesting the licence be renewed for a ten-year term. Prior to commencing any site preparation activities, OPG will be required to submit a number of documents which CNSC staff will review to ensure the activities can be carried out safely and ensuring the intent of the JRP recommendations are met.

This CMD presents CNSC staff's assessment, conclusions and recommendations in respect of OPG's licence renewal application. CNSC staff reviewed and verified the documentation submitted by OPG and conclude that the information submitted was in compliance with the *Nuclear Safety and Control Act* (NSCA) [4], the *Class I Nuclear Facilities Regulations*, the environmental envelope set by the JRP and CNSC regulatory requirements including REGDOC 1.1.1 Site Evaluation and Site Preparation for New Reactor Facilities.

The JRP EA report [5] determined that the DNNP was not likely to cause significant adverse environmental effects, taking into account the JRP's recommendations and the implementation of proposed mitigation measures. CNSC staff assessment of the licensee's regulatory performance concludes that the mitigation measures identified during the JRP review process remain valid.

Therefore, CNSC staff conclude that the circumstances for issuing OPG a renewed site preparation licence remain within the bounds and intent of the current licensing basis. CNSC staff further conclude that the licensee is qualified to carry out those activities, and will continue to make adequate provisions 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.

CNSC staff recommend that the Commission:

1. Pursuant to section 24 of the *Nuclear Safety and Control Act*, renew the Power Reactor Site Preparation Licence as proposed in PRSL 18.00/2031, with amendments; and,
2. Authorize the delegation of authority as set out in section 5.8 of this CMD.

Referenced documents in this CMD are available to the public upon request.

PART ONE

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

Part One includes:

1. An overview of the matter being presented;
2. Overall conclusions and overall recommendations;
3. General discussion pertaining to site evaluation and the safety and control areas (SCAs) that are relevant to this submission;
4. Discussion about other matters of regulatory interest; and,
5. Addenda material that complements items 1 through 4.

Part Two provides all available information pertaining directly to the current and proposed licence.

1 OVERVIEW

1.1 Background

The Darlington nuclear site is located on the north shore of Lake Ontario, in the Municipality of Clarington, Ontario, 10 km east of Oshawa and approximately 65 km east of Toronto. The existing site consists of the Darlington Nuclear Generating Station, 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 proposed for development of the Darlington New Nuclear Project (DNNP) site is primarily the easterly one third of the overall site (Figure 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: Aerial photo of the Darlington Nuclear Site

Environmental Assessment

On September 30, 2009, Ontario Power Generation (OPG) submitted an Environmental Impact Statement (EIS) [6] and an application [7] for a Licence to Prepare Site (LTPS) at the Darlington site for up to four (4) Class 1A nuclear power reactors with a maximum combined net electrical output of 4800 megawatt electrical.

In 2012, an environmental assessment (EA) was completed by a Joint Review Panel (JRP) under *Canadian Environmental Assessment Act*, (1992) (CEAA) [1] for the DNNP. The JRP review process included:

- a public review and comment period on the EIS guidelines [6], OPG's EIS [6] and licence application [7];

- requests to OPG for additional information deemed necessary by the JRP;
- three open house information sessions at public venues in the Project area;
- submissions from federal, provincial and municipal governments, Indigenous groups and other interested parties; and
- a 17-day public hearing in the Municipality of Clarington from March 21, 2011 to April 8, 2011.

The JRP EA report [5] concluded that the proposed project is not likely to cause significant adverse environmental effects, taking into account the JRP recommendations and implementation of proposed mitigation measures. The JRP directed 67 recommendations to various responsible authorities including federal authorities, the Government of Ontario, the Municipality of Clarington and OPG. The Government of Canada (GOC) response [9] to the JRP EA report, accepted or accepted the intent of all of the JRP recommendations within its jurisdiction. In August 2012, the JRP as a panel of the Commission issued a ten-year power reactor site preparation licence (PRSL) to OPG following the EA decision.

In 2013, the Government of Ontario made the decision to defer construction of new reactors at the DNNP site. Following this announcement, OPG's efforts focused on maintaining the site and addressing selected commitments to confirm assumptions made in the EA. OPG has not commenced any site preparation activities covered in its PRSL. Licensed site preparation activities include: clearing and grubbing of vegetation, site excavation and grading, installation of utilities to service the future nuclear facility, construction of site access control measures and administrative/support buildings, as well as the construction of environmental monitoring and mitigation systems, flood protection and erosion control measures.

Following the issuance of the PRSL [3], litigation was filed by Greenpeace, Canadian Environmental Law Association, Lake Ontario Waterkeeper and Northwatch challenging the EA and issuance of the licence. The Federal Court decision found errors in the EA and therefore quashed the decision on the EA. The Federal Court's decision was appealed to the Federal Court of Appeal, which overturned the Federal Court decision and restored the EA and the licence. The Supreme Court of Canada dismissed an application for leave to appeal submitted by Greenpeace, Canadian Environmental Law Association, Lake Ontario Waterkeeper and Northwatch on April 28, 2016. In conclusion, the EA and the licence to prepare a site were upheld by the courts.

This Commission Member Document (CMD) provides CNSC staff's assessment of OPG's application to renew its licence to prepare the site, including applicable programs and measures planned or in place, to provide adequate provision for the protection of the environment, the health and safety of persons, the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

1.2 Highlights

OPG's application for licence renewal

On June 29, 2020, OPG submitted an application for renewal [2] of PRSL 18.00/2022 [3] pursuant to section 24(2) of the NSCA [4] and in accordance with the *General Nuclear Safety and Control Regulations* (GNSCR), and the *Class I Nuclear Facilities Regulations*. OPG's current licence expires in August 2022.

The project scope of DNNP as described in OPG's 2009 application [7] remains unchanged. To date, OPG has not initiated any licensed activities, nor has it selected a reactor technology.

CNSC staff note that OPG's application and supporting documents are available publically on OPG's website https://www.opg.com/powering-ontario/our-generation/nuclear/darlington-nuclear/darlington-new-nuclear/

CNSC staff assessment of OPG's application

CNSC staff assessed the application to ensure the continued suitability of the DNNP site in accordance with the regulatory requirements of the *Class I Nuclear Facilities Regulations* and the expectations outlined in REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*. CNSC staff confirm that the existing licensing basis for DNNP including the DNNP Commitments Report remains valid.

CNSC staff assessment concludes that the DNNP site remains suitable and staff rated OPG's performance at the DNNP as "satisfactory" in all applicable safety and control areas (SCAs). The results of CNSC staff's technical assessments are outlined in Section 3 and Section 4 of this CMD.

1.3 Overall Conclusions

CNSC staff conclude the following with respect to paragraphs 24(2), (4)(*a*) and (*b*) of the NSCA, in that OPG:

1. Is qualified to carry on the activity authorized by the licence;
2. Will, in carrying out these activities, 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.

1.4 Overall Recommendations

CNSC staff recommend the following:

1. Renew, pursuant to section 24 of the NSCA, the power reactor site licence, with amendments PRSL 18.00/2031, authorizing OPG to carry out the activities listed in Part IV of the proposed licence from August 18, 2021, to August 17, 2031
2. Delegate authority as set out in Section 5.8 of this CMD.

2 MATTERS FOR CONSIDERATION

2.1 Environmental Assessment

In 2012, an Environmental Assessment was completed by a JRP under the CEAA (1992) [1]. Additional background on the JRP process is provided in section 1.1. It was determined that the proposed project is not likely to cause significant adverse environmental effects, taking into account the JRP recommendations and implementation of proposed mitigation measures. In reviewing OPG's licence application, CNSC staff determined that the scope of the renewal application remains within the bounds of the previously approved environmental assessment.

More information on CNSC staff's assessment of OPG's environmental monitoring and protection programs for this licence application can be found in the environmental protection SCA in Section 4.7 of the CMD. In summary, CNSC staff conclude that OPG continues to meet regulatory requirements and will make adequate provision for the protection of the environment and the health of persons.

CNSC staff will continue to verify and ensure that, through ongoing licensing and compliance activities and reviews, the environment and the health of persons are protected and will continue to be protected over the requested licence period.

2.2 Relevant Safety and Control Areas (SCAs)

The functional areas of any licensed facility or activity consist of a standard set of SCAs. Each SCA is comprised of "specific areas" of regulatory interest; however, the specific areas associated with each SCA vary between facility types. For the LTPS not all SCAs are applicable because of the state of the site and the activities being carried out. For further information regarding SCAs, see appendix D of this CMD.

In the following table, the risk-ranking column indicates the overall level of risk associated with each SCA and the rating level indicates the overall compliance with regulatory requirements for implementation at the DNNP. Appendix A provides additional information related to "Risk Ranking" and appendix B further defines the "Rating Levels".

Functional Area	Safety and Control Area	Risk Ranking*	Relevant to this CMD	Rating Level
Management	Management System	H	YES	SA
	Human Performance Management	N/A	NO	N/A
	Operating Performance	H	YES	SA
Facility and Equipment	Safety Analysis	H	YES	SA
	Physical Design	H	YES	SA
	Fitness for Service	N/A	NO	N/A
Core Control Processes	Radiation Protection	L	YES	SA
	Conventional Health and Safety	M	YES	SA
	Environmental Protection	H	YES	SA
	Emergency Management and Fire Protection	L	YES	SA
	Waste Management	L	YES	SA
	Security	M	YES	SA
	Safeguards and Non-Proliferation	L	YES	SA
	Packaging and Transport	N/A	NO	N/A

* H = High; M = Moderate; L = Low; SA = Satisfactory, N/A = Not Applicable

2.3 Other Matters of Regulatory Interest

The following table identifies other matters that are relevant to this CMD.

OTHER MATTERS OF REGULATORY INTEREST	
Area	**Relevant to this CMD**
Indigenous Consultation	YES
Other Consultation	YES
Cost Recovery	YES
Financial Guarantees	YES
Improvement Plans and Significant Future Activities	YES
Applicant / Licensee's Public Information Program	YES
Nuclear Liability Insurance	NO

The relevant "other matters" of regulatory interest are discussed in Section 5 of this CMD.

2.4 Regulatory and Technical Basis

The regulatory and technical bases for the matters discussed in this CMD arise from the *General Nuclear Safety and Control Regulations*, the Class I Nuclear Facilities Regulations, REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities* as well as other regulatory requirements of the NSCA. Further information regarding the regulatory and technical bases for the matters discussed in this CMD is provided in Appendix C of this document.

3 SITE EVALUATION

Site evaluation is a process that continues throughout all stages of licensing and over the life span of the facility, to ensure that the facility's design basis and safety case remains current with changing environmental conditions or modifications to the facility itself. Site evaluation information is also a key input into reactor facility design and subsequent stages of licensing. The site characterization information obtained during site evaluation is taken into account in the design of the reactor facility and re-evaluated during site preparation and over the lifecycle of a reactor facility; this includes the periodic safety reviews and environmental risk assessments. Information gathered through the site evaluation process is reviewed and assessed by CNSC staff throughout all stages of licensing. Throughout the current licence term OPG has conducted follow up studies and evaluations regarding site evaluation.

REGDOC 1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities* clearly outlines the necessary requirements for a LTPS. CNSC staff used the information in REGDOC 1.1.1 in conjunction with other REGDOCs, CSA standards and the recommendations stemming from the JRP review process in order to assess OPG's application and to ensure OPG continues to adequately assess the suitability of the DNNP site. In the current and proposed licence CNSC staff have included site specific conditions that ensure OPG will address all mitigation measures and commitments made during the JRP review process. In order to fulfill on all mitigation measures and commitments made, OPG organized these commitments into the DNNP Commitments Report [10]. During the licence term CNSC staff regularly verified the DNNP Commitments Report to ensure OPG was addressing all commitments made in the JRP EA report, licensing application process and applications to other regulatory bodies. CNSC staff have provided annual updates on DNNP as part of the *Regulatory Oversight Report for Canadian Nuclear Power Generating Sites* and presented a midterm update to the Commission in 2018 [11].

In its licence application OPG submitted updated site characteristics and baseline environmental data as part of the continued site evaluation process including: atmospheric, meteorological, geological, geophysical, hydrological, hydrogeological, biological, ambient radioactivity and pre-existing hazardous substances. More details on CNSC staffs' assessment of each aspect of OPGs submission of baseline data is provided in section 3.1 below. Based on CNSC staffs' review CNSC staff concluded that the information provided by OPG regarding site characteristics adequately describes the suitability of the site, and where necessary, has added mitigation measures. As a result of these studies and evaluations commitments in the DNNP Commitments Report have been closed, new ones added and others have been modified. The status of all JRP recommendations can be found in Appendix E.

3.1 Baseline Data

Atmospheric and Meteorological Data

During the course of the assessment of OPG's licence application submission, CNSC staff requested additional baseline air quality data for tritium gas, Iodine-131 and radioactive particulate emissions as required by the OPG commitment. Note that the presence of these radio-nuclides do not arise from DNNP LTPS activities; however, baseline information gathered is intended to document pre-existing concentration levels before execution of the project.

CNSC staff confirm that OPG provided sufficient information in its submissions to document changes to the radiological air-monitoring parameter baseline data since OPG's 2009 LTPS application [7]. CNSC staff confirm that OPG continues to monitor airborne tritium gas (i.e., elemental tritium), I-131 and particulate nuclear substances, which is reported as part of OPG's effluent monitoring program. CNSC staff assessed and confirm that OPG has demonstrated that the guidance in REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities* to obtain baseline concentrations for these parameters has been addressed.

CNSC staff agree with OPG's assessment that the contributions to dose from airborne tritium gas (i.e., elemental tritium), I-131 and radioactive particulate emissions are very low and accounted for through modelling consistent with the guidelines in CSA N288.1-20 *Guidelines for modelling radionuclide environmental transport, fate, and exposure associated with the normal operation of nuclear facilities*. CNSC confirm that based on Darlington Nuclear Generation Station (DNGS) 2019 public dose data, tritium contributes a negligible amount to the total dose.

Regarding commitment D-P-3.10 [10], the Smog Alert Action Plan, OPG conducted a baseline update of meteorology and ambient air quality for DNNP site and the surrounding area. Based on OPG's results, CNSC staff confirm that baseline conditions have remained similar with some improvements in air quality since 2009.

Geological and Geophysical Data

Based on criteria from REGDOC-1.1.1 CNSC staff assessed geological and geophysical data and requested OPG revise Commitment D-P-9.4 [10] to explicitly define both seismic design basis events and seismic beyond design basis conditions in its Site Geotechnical and Seismic Hazard Investigation Program.

OPG revised Commitment D-P-9.4 [10] and will implement the applicable aspects of geotechnical and seismic assessment and qualification. CNSC staff assessed the revised commitment and conclude it is acceptable.

Biological

OPG has been conducting baseline field studies since 2008 to monitor the population of Bank Swallow colonies, develop a mitigation plan that includes provision of artificial Bank Swallow habitat, and undertake research into declining aerial foragers, such as Bank Swallows, in Ontario and, in particular, at the DNNP site study area. OPG is conducting this work, in accordance with the JRP review that identified that a loss of Bank Swallow nesting habitat on the shoreline bluffs of Lake Ontario along the DNNP site is expected to occur during the site preparation and construction phases.

OPG's 2019 Bank Swallow Monitoring Report [12] showed colony numbers in the Bank Swallow evaluation area have decreased from 2017 to 2019, while numbers have increased in the same period in the Bond Head reference area.

During the current licensing period, OPG designed and constructed two artificial nesting structures, an earthen mound and a fixed face earthen embankment. There was no uptake of these structures by Bank Swallows and the structures have been removed. OPG is continuing to explore other artificial nesting structure options in support of sub-commitment D-P-3.8 [10]. The CNSC and Environment and Climate Change Canada (ECCC), including the Canadian Wildlife Service, have been involved in discussions with OPG regarding the research studies OPG has conducted on the artificial nesting habitats for Bank Swallows.

CNSC and ECCC staff have reviewed the annual monitoring reports detailing the Bank Swallow burrow counts, occupancy studies and artificial nesting structures development and monitoring. CNSC and ECCC staff expect OPG to continue to monitor the study area and consider existing information on Bank Swallows to gain insight into reasons for the decreases observed in some areas. In addition, CNSC and ECCC expect OPG to conduct future Bank Swallow colony surveys from land when permissible, to confirm the declining trend since 2017.

OPG has identified that since 2009, there have been status changes for various species at the DNNP site study area. Some of these changes resulted in the species being listed as at risk under the provincial *Endangered Species Act* (ESA) [13] and federal *Species at Risk Act (*SARA*)* [14]. The protected status of the Bank Swallow has changed since the JRP review process. With Bank Swallows now listed as a 'species at risk' under SARA [14] and ESA [13], OPG must satisfy the requirements of all other federal and provincial laws with respect to this species.

Ongoing monitoring since 2009 has recorded additional species in the site area. These a include Common Nighthawk, Eastern Whip-poor-will, Rusty Blackbird, Little Brown Myotis, Northern Myotis, and Tri-coloured Bat. In addition, similar to the Bank Swallow, the status of nine other species has changed to a 'species at risk'; these are: Eastern Wood-Pewee, Olive-sided Flycatcher, Canada Warbler, Wood Thrush, Bobolink, Eastern Meadowlark, Common Snapping Turtle, American Eel and Lake Sturgeon.

Under SARA [14] and ESA [13], it is prohibited to kill, harm, harass protected species and damage or destroy their residences or critical habitat without authorization. Any future activities undertaken by OPG that may have a potential effect on these species will require OPG to respect and satisfy the requirements of the SARA [14] and ESA [13]. OPG's existing mitigation and sub-commitments were developed to be adaptable and will be scaled appropriately to address identified changes to baseline and to conform to any permitting requirements to address threatened and endangered species under the provincial ESA [13].

OPG also identified the discovery of a new Butternut tree, which was not characterized as part of OPG's original DNNP submissions. The tree is a federal and provincial species at risk. OPG has determined that the tree must be retained and site planting plans will address the Butternut tree. OPG has revised D-P-3.7 to include the new Butternut tree in the site planting plans. The revision to this sub-commitment does not alter the previous conclusions with respect to effects of the project on the environment.

CNSC staff confirm that existing mitigation and commitments documented in the DNNP Commitments Report (D-P-3.4, D-P-3.7, D-P-3.8, D-P-7.2, D-P-12.5) [10] were developed to be adaptable to address identified changes to baseline and to conform to any permitting requirements to address threatened and endangered species under the provincial ESA [13]. CNSC staff will carry out an assessment of the documents provided to fulfill these commitments prior to the conduct of any site preparation activity to ensure the species at risk are suitably addressed by OPG.

OPG updated inland aquatic habitat baseline data during the current licence period. This included a fish habitat assessment for upper reaches of two intermittent tributaries of Darlington Creek, update of the Darlington Creek fisheries and water and sediment sampling in Coot's Pond and Treefrog Pond. Based on OPG's results, CNSC staff confirm that baseline conditions have remained similar and within the respective surface water quality and sediment quality guidelines.

OPG also conducted an update of baseline data during the current licence period for the aquatic environment for plankton community, benthic invertebrates, fish impingement and entrainment, fish community (adult, juvenile, larvae, and eggs), thermal plume, and fish habitat in support of the design of cooling water intake and outlet studies. CNSC staff and as appropriate, ECCC and Fisheries and Oceans Canada (DFO), reviewed the methodology and results and have provided feedback and recommendations for improvements in some areas to OPG. CNSC staff assessed the data and methodology and are satisfied with the findings.

Hydrogeological and Biological Data, Ambient Radioactivity and Population Distribution

CNSC staffs' assessment of OPG submissions confirms that the requirements and guidance of REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities* have been met in the following areas:

- Hydrogeological data;
- Baseline Ambient Radioactivity and Pre-Existing Hazardous Substances;
- Population Distribution and Use of Land and Water.

CNSC staff agree with OPG's assessment that the information provided regarding baseline data is sufficient for this stage of licensing. As discussed, OPG must conduct a number of additional baseline studies as described in the DNNP Commitments Report [10].

3.2 Evaluation of Natural and External Events

The evaluation of natural external events is a key component in identifying possible hazards from events such as flooding, fires or high winds to a facility from the environment itself. These naturally occurring are characterized in order to ensure the design is capable of functioning safely on the site over its full lifespan.

Evaluations of external naturally occurring hazards or events include assessments of meteorological, flooding, seismic, geotechnical, and other naturally occurring hazards. Discussion of each external hazard is in the following sections.

Meteorological, Hydrological and Climate Change Hazards

With respect to design basis precipitation and design basis floods, OPG clarified that details of the design basis precipitation and the corresponding design basis floods, including the derivation methodology will be submitted to the CNSC once OPG makes a selection on reactor technology.

OPG will carry out sensitivity analyses for the durations of probable maximum precipitation on probable maximum floods to determine whether other durations of probable maximum precipitation are more limiting than the 12 hour (hr) probable maximum precipitation estimate provided in the *Ontario Lake and Rivers Improvement Act* technical guide report. CNSC requires that OPG take the results of the flooding studies into account in the site layout and facility design and submit the results of these studies to the CNSC for review and acceptance. CNSC staff find OPG's commitment to performing the detailed flood hazard assessment is acceptable.

Groundwater, Geotechnical, Seismic & Geophysical Hazards

With respect to geotechnical, seismic and geophysical hazards, CNSC staff requested that OPG explicitly consider both design basis events and beyond design basis events in the Site Geotechnical and Seismic Hazard Investigation Program in accordance with its existing commitment D-P-9 [10]. OPG agreed and the revised sub-commitment D-P-9.4 is included in the DNNP Commitments Report [10].

CNSC staff also requested additional information on OPG's 2019 Probabilistic Seismic Hazard Assessment (PSHA) [15]. OPG provided data [17] to compare changes in seismic hazards at different return periods between the 2009 PSHA [16] and the 2019 PSHA including a summary of the updates from the 2009 PSHA to the 2019 PSHA. CNSC staff assessed the additional data and summary and determine that it is sufficient to support the 2019 PSHA.

CNSC staff requested that OPG clarify if the DNNP liquefaction evaluation submitted to the support the JRP process is still valid. OPG provided this information during the course of the assessment that was reviewed by CNSC staff. CNSC staff concluded the report was acceptable and the results continued to support the suitability of the DNNP site with respect to potential impacts from natural and external events.

Summary

Further work will be conducted by OPG under commitment D-P-9 [10] to consider explicitly both design basis events and beyond design basis events in Site Geotechnical and Seismic Hazard Investigation Program. This work must be completed in support of the construction phase. In addition, OPG is required to carry out flooding studies in accordance with applicable standards to ensure that all identified potential flood hazards are mitigated. CNSC staff conclude that the information provided by OPG regarding natural external hazards comply with CNSC regulatory requirements under the NSCA for site preparation activities.

3.2.1 Evaluation of External, Non-Malevolent, Human-Induced Events

External non-malevolent human-induced events include, but are not limited to aircraft crashes, other transportation hazards, fires and explosions, chemical and radiological hazards or electromagnetic interference hazards.

CNSC staff assessed the information provided in the renewal application and supporting documents and conclude that the information provided by OPG regarding the evaluation of external non-malevolent human-induced events meet the requirements outlined in section 3.6 of REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*, and applicable requirements under the NSCA and associated regulations.

3.3 Considerations for Site Suitability

Key considerations in the evaluation of the suitability of a site for the construction and operating of a nuclear facility include the area impacted by normal operation and postulated accidents and malfunctions, and population density and projected population growth.

Dose Impacts

The effects on the environment from the project include dose consequences from normal operation and postulated accident and malfunctions. Exclusion zone and emergency planning zones are sized and established using this information. OPG provided information on radiological releases during normal operations and accident conditions throughout the JRP review process. Based on the information submitted by OPG, CNSC confirmed that the design basis accident (DBA) dose limit of 20 millisievert (mSv) is met. The exclusion zone, which is based on the dose consequences from DBAs is 500 m. An emergency planning zone of 3 km was established using the safety goal-based release of 10^{14} becquerels (Bq) Cs-137 and associated radionuclides. CNSC confirmed that the exclusion zone and the 3 km emergency planning zone established in the 2009 application remains valid.

In accordance with deliverable D-P-12.1 [10], EA Follow-up, OPG will have to demonstrate that effects of reactor technology selection remain within the effects predicted in the EA, including dose consequences. OPG may need to take into account additional mitigating measures to ensure the effects of the selected technology remain within the bounds of the established environmental scope. These mitigating measures may be design or operational considerations.

Emergency Planning Zone

The population density, population distribution and other characteristics of the emergency planning zone are important considerations of the implementation of emergency response measures, and on safety and security throughout the projected lifecycle of a reactor facility. OPG provided information on population growth projections over the planned life span of the proposed facility in the 2009 and in its licence renewal application. CNSC assessed the submission and found it to be acceptable, and supports conclusions that the emergency response measures are adequate to support the population growth in this area.

Population Growth

The population density, population distribution and other characteristics of the emergency planning zone are important considerations regarding the implementation of emergency response measures, and on safety and security throughout the projected lifecycle of the reactor facility. OPG provided information on population growth projections over the planned life span of the facility in the 2009 and the renewal application. CNSC assessed the submission and found it to be acceptable, and supports conclusions regarding the suitability of the site.

3.4 Site Suitability

Site suitability was originally assessed as part of the JRP review process. As part of the assessment of this licence renewal application, CNSC staff considered the revised documentation submitted by OPG. CNSC staff confirm site suitability through evaluation of updated information submitted by OPG on hazards, external events and accident scenarios. CNSC staff confirmed the assessments conducted by OPG on security, exclusion zones and emergency planning zones presented during the JRP review process remain valid and comply with CNSC requirements.

As a result of the detailed technical reviews completed, CNSC staff remain satisfied that the site continues to be suitable taking into account the area projected to be impacted by potential accidents and malfunctions, the ability to protect the site from the security perspective, and the ability to effectively carry out emergency response plans, including evacuation.

3.5 Conclusion

The results of the site evaluation, especially the site characterization, are used as inputs into the facility design, supporting safety analysis and licensing processes. During the current licence term OPG submitted documentation in support of fulfilling commitments outlined in the DNNP Commitments Report [10]. CNSC staff reviewed these submissions and verified that the intent of the recommendations was met and closed some these commitments.

OPG's application outlined changes to its site evaluation results. CNSC staff confirm these changes remain within the licensing basis as defined by the JRP review process. During the proposed licence term OPG will be required to continue to fulfill the commitments outlined in the DNNP Commitments Report [10]. CNSC staff included licence condition 15.1 and 15.2 to ensure that all mitigation measures proposed and commitments made by OPG through the JRP review process are fulfilled, including the EA follow up program. Some commitments (e.g. those related to species at risk and fish habitat compensation) are regulated by other federal and provincial regulators. CNSC staff will continue to report to the public and the Commission on the status of the recommendations through the *Regulatory Oversight Report for Canadian Nuclear Power Generating Sites*. If OPG deviates from its commitments, CNSC staff would take regulatory action and report this to the Commission through the Status Report on Power Reactors, provided at each Commission meeting, or as a stand-alone memorandum to the Commission. CNSC staff would also notify other federal or provincial regulators as appropriate.

4 GENERAL ASSESSMENT OF SCAS

CNSC staff's assessments presented in the following sections are based on a comprehensive review of OPG's application and activities carried out to support the current licence period. This section also includes CNSC staffs' evaluation of the measures to be implemented by OPG during the proposed licence period. CNSC staff used REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities* that references the NSCA and associated regulations and applicable REGDOCs and CSA standards as the primary criteria set for the licence renewal assessment.

CNSC staff note that OPG did not conduct any LTPS licensed activities during the current licence period. However, OPG has carried out some baseline site characterization and other long lead-time work to address selected commitments identified in the DNNP Commitments Report, as outlined in the preceding sections of this CMD.

The SCAs applicable to renewal of the OPG DNNP PRSL are listed in Section 2.2 of this CMD. As presented in REGDOC-1.1.1, the following SCAs are not relevant to a LTPS:

- human performance management, as the current complexity and hazards at the site, as well as associated human performance management issues, are greatly reduced due to the nature of the proposed activities. CNSC staff note that the assessment of some aspects of human performance management are addressed under the Management System SCA;
- fitness for service, due to the absence of a nuclear facility and associated structures, systems and components to assess fitness for service; and,
- packaging and transport, due to the absence of nuclear substances and radiation devices at the site which results in no packaging or transport requirements.

Overall, based on the desktop reviews conducted, CNSC staff conclude that OPG meets regulatory requirements and has appropriate plans in place to ensure the criteria from REGDOC-1.1.1 and other associated REGDOCs are met and implemented.

Should the Commission decide to renew OPG's LTPS, CNSC staff will continue to monitor OPG's activities and fulfillment of the DNNP Commitments Report through ongoing regulatory oversight activities.

4.1 Management System

The Management System SCA covers the framework that establishes the processes and programs required to ensure an organization achieves its safety objectives, continuously monitors its performance against these objectives, and fosters a healthy safety culture.

4.1.1 Discussion

CNSC staff assessed OPG's management system and conclude that it meets the requirements for site evaluation activities including the preparation of OPG's submissions in support of the application to renew the LTPS.

OPG's current DNNP management system includes a number of programs developed to support the OPG LTPS 2009 Application [7]. OPG has committed to develop other programs and implementing documents prior to the commencement of site preparation activities, as documented in the OPG DNNP Commitments Report [10], commitment D-P-1. The current LCH [18] outlines the programs necessary for site preparation and for subsequent licensing stages. Following the Government of Ontario 2013 decision to defer the construction of new nuclear reactors at Darlington, OPG deferred work on the DNNP management system. OPG has not initiated any licensed site preparation activities and has maintained the licence and site by making use of OPG nuclear (OPGN) management system documents, as permitted in the current DNNP LCH [18].

OPG has integrated the DNNP organization into the existing OPGN organization and plans to adopt the OPGN management system for the site preparation licensing stage. This will enable oversight from a single management system to be applied for OPG nuclear facilities. Under the OPGN management system, the DNNP site preparation activities will be conducted in accordance with modern codes and standards including the revised standard CSA N286-12 *Management System Requirements for Nuclear Facilities*.

CNSC staff assessed the OPG DNNP organizational changes and concluded that the OPGN management system program documents identified by OPG are adequate to manage and control the activities of the DNNP site preparation licensing stage and renewal of DNNP PRSL. CNSC staff have assessed the OPGN management system in support of other files and conclude that it meets the requirements of CSA N286-12 and is suitable for use at the DNNP.

If OPG's licence is renewed, during the proposed licence period, OPG will revise the DNNP Management System and Implementing Documents under commitment (D-P-1) [10] to ensure the commitment aligns with any remaining actions associated with the development of management system documents for the site preparation licensing stage. CNSC staff will conduct a re-assessment of these OPG documents when they are submitted for acceptance prior to the conduct of site preparation activities.

OPG plans to use an Engineering, Procurement and Construction contractor (EPC) to undertake the physical activities related to site preparation. OPG has committed to ensuring ongoing and thorough oversight for all activities of the EPC though the different stages of the project in accordance with the OPG management system. OPG must maintain its role and responsibilities as the licensed entity for DNNP including, as owner of the contract and responsibilities to foster a healthy safety culture.

The EPC will have its own management system that must be aligned to the OPG management system and compliant with applicable current standards in accordance with Commitment D-P-4 [10] in the OPG DNNP Commitment Report [10]. CNSC staff have assessed OPG's plan for use of an EPC and conclude it is appropriate for use during the LTPS activities.

OPG's application considered the Human Performance and Performance Improvement programs. These programs implement OPG's expectations for understanding and promoting a strong safety culture. This also includes provisions for training workers for the performance of all licensed site preparation activities. CNSC staff have assessed OPG's measures to foster a strong safety culture and conclude they are suitable for the DNNP.

OPG provided information in their submissions confirming that the management system transition process for DNNP includes the adoption of OPG's fleet wide Environment, Health and Safety (EHS) Managed Systems program to control site preparation activities. CNSC staff have assessed OPG's EHS in support of other files and conclude that is suitable for use at the DNNP site.

CNSC staff conclude that OPG's performance in the management system SCA has demonstrated appropriate management system controls for the activities conducted in relation to PRSL 18.00/2022 [3]. CNSC staff conclude that OPG has an effective management system in place based on submissions provided on selected commitments and the timely provision of quality submissions along with OPG's safety culture, including in-depth self-assessment and transparent reporting of gaps.

CNSC regulatory focus for the proposed licence period will be on OPG's transition from its DNNP management system to the OPGN management system. OPG's Design Management Program is a regulatory focus for this SCA. This program ensures appropriate management control of prescribed activities for the design of the nuclear facility and organization.

4.1.2 Conclusion

CNSC staff conclude that OPG met its regulatory requirements and has maintained and implemented a satisfactory management system. CNSC staff conclude that OPG is qualified to carry out the licensed activities at the DNNP site and have appropriate plans to ensure adequate measures are in place prior to carrying out site preparation activities.

4.1.3 Recommendation

One standardized licence condition is included in the proposed licence. Licence condition 1.1 requires that the licensee implements and maintains a management system. Compliance verification criteria for this licence condition is included in the draft LCH.

4.2 Operating Performance

The Operating Performance SCA includes an overall review of the conduct of the licensed activities and the activities that enable effective performance.

4.2.1 Discussion

The operating performance SCA requires licensees to implement and maintain an operations program for the conduct of licensed activities. This SCA focuses on the conduct of operation and the management of risks from those activities. Under the current licence, OPG has not progressed to the point of conducting the licensed activities. CNSC staffs' assessment in this SCA focused on OPG's conduct of characterization activities and preparation for future submissions.

OPG has not identified any new risks to health, safety or the environment that would require any new mitigation measures. CNSC staff assessed OPG's application and supporting documents and conclude that the proposed safety and control measures, including relevant commitments, for Operating Performance under a LTPS remain appropriate for the proposed scope of activities.

OPG continues to monitor the DNNP site conditions. OPG has committed to notifying CNSC of any changes in site conditions and any activities arising from such changes. CNSC staff note that no notifications have been provided to date. CNSC staff would assess those notifications to ensure that OPG's activities remain within the bounds of the LTPS however.

As outlined in the DNNP Commitments Report [10], prior to site preparation, OPG will conduct a comprehensive soils characterization program (commitment D-P-3.6) [10]. If encountered, contaminated soil or rock will be assessed and managed. CNSC staff will conduct a re-assessment of these OPG documents when they are submitted for acceptance prior to the conduct of site preparation activities. In particular, CNSC staff will focus its assessment on information that demonstrates design of flood protection and erosion control, and of adequately supporting structures and civil works remain suitable for DNNP.

4.2.2 Conclusion

CNSC staff assessed the OPG information and documentation under the Operating Performance SCA and found it sufficient to meet the regulatory requirements for a LTPS. CNSC staff conclude that OPG is qualified to carry out the licensed activities at the DNNP site and have appropriate plans to ensure adequate measures are in place prior to carrying out site preparation activities.

4.2.3 Recommendation

Two licence conditions are included in the proposed licence. Licence condition 3.1 requires that the licensee implements and maintains an operations program and licence condition 3.2 requires that the licensee implements and maintains a reporting program. Compliance verification criteria for these licence conditions are included in the draft LCH.

4.3 Safety Analysis

The Safety Analysis SCA 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 preventive measures and strategies in reducing the effects of such hazards.

4.3.1 Discussion

For site preparation, the safety analysis SCA focuses on hazard analysis which is used to systematically identify and assess hazards in order to evaluate the potential internal, external, human-made and natural events that can cause the identified hazards to initiate faults that develop into accidents. Future safety analysis and plant design activities build on the information established by the hazard analysis.

OPG includes Safety Analysis in its Reactor Safety Program. CNSC staff assessed OPG's reactor safety program and confirm that the hazard analysis performed for the DNNP PRSL renewal application meets the requirements and guidance of REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*.

OPG performed hazard assessments of natural external hazards such as seismic, meteorological and biological. OPG also assessed hazards from human-induced hazards such as transport accidents, fires and explosions. The impact of these potential hazards were assessed on the site suitability for DNNP. CNSC staff have assessed OPG's hazard assessments and conclude that they meet the requirements of REGDOC-1.1.1. More information on CNSC assessment of OPG's submissions for natural external hazards are found in Section 3.2 of this CMD.

The safety analysis work resulted in some OPG commitments, documented in the DNNP Commitments Report [10]. These commitments include:

- Commitment D-P-9 and its sub-commitments require OPG to perform additional activities as required by Site Geotechnical and Seismic Hazard Investigation Program; and,
- Commitment D-C-3 and its sub-commitments require OPG to perform preliminary safety analysis, which will be performed during the licence to construct stage of licensing of the DNNP site once a design is selected.

CNSC staff will conduct a re-assessment of these OPG documents when they are submitted for acceptance at the appropriate activity phases.

OPG periodically performs hazard screening assessments for the DNGS facility and results from this hazard assessment are applicable to the DNNP site due to its close geological proximity. The most recent DNGS hazard screening assessment was performed in 2019 [19] in support of 2020 DARA PSA updates. CNSC staff have assessed the results from these assessments that further support the conclusion that OPG has met the requirements of REGDOC-1.1.1 related to hazard analysis for LTPS.

4.3.2 Conclusion

CNSC staff assessed the OPG information and documentation under the Safety Analysis SCA and found it sufficient to meet the regulatory requirements for a LTPS. CNSC staff conclude that OPG is qualified to carry out the licensed activities at the DNNP site and have appropriate plans to ensure adequate measures are in place prior to carrying out site preparation activities.

4.3.3 Recommendation

One standardized licence condition is included in the proposed licence. Licence condition 4.1 requires that the licensee implements and maintains a safety analysis program. Compliance verification criteria for this licence condition is included in the draft LCH.

4.4 Physical Design

The Physical Design SCA relates to activities that impact the ability of structures, systems and components to meet and maintain their design basis given new information arising over time and taking changes in the external environment into account.

4.4.1 Discussion

Activities under this SCA for LTPS focus on site evaluation and characterization activities to ensure the site is suitable to host the potential future activities.

CNSC staff reviewed OPG's application including submissions regarding OPG's review of site characterization data associated with the DNNP site. CNSC staff confirm that the reviews did not identify any new or changed information that would alter the proposed exclusion zone, civil structures and civil works or layout of areas, structures and systems identified in the previous application.

OPG identified further requirements for safety analysis from OPG's 2009 LTPS application [7] that will be addressed through OPG commitments prior to a Licence to Construct application as follows:

- OPG Commitment D-P-9.4 [10] will ensure appropriate Seismic Design Extension Conditions and Seismic Beyond Design Basis Conditions will be defined for DNNP. These conditions will be implemented for applicable aspects of geotechnical and seismic assessment and qualification. Additionally, Design Basis Earthquake ground motion values will be defined for DNNP; and,

- OPG Commitment D-C-3.1 [10] will ensure that detailed safety analysis, including probabilistic safety analysis, takes place following selection of a reactor technology and any limitations presented by data used in studies for event analysis will be documented.

CNSC staff will conduct a re-assessment of these OPG documents when they are submitted for acceptance prior to the conduct of site preparation activities. In particular, CNSC staff will focus on determination of exclusion zone and emergency planning zones, design of civil structures and civil works and layout of areas, structures and systems in the conduct of the assessments.

Civil works

For a LTPS, the following activities have associated civil structures and civil works requiring physical design:

- Construction of site access control measures;
- Clearing and grubbing of vegetation;
- Excavation and grading of the site;
- Installation of services and utilities;
- Construction of administrative and support buildings;
- Construction of environmental monitoring and mitigation systems; and,
- Construction of flood protection and erosion control measures.

Lake infill is a civil undertaking associated with site preparation activities. Commitment D-P-16 in the OPG DNNP Commitment Report [10] ensures that adequate lake infill design measures will be undertaken prior to site preparation. CNSC staff will conduct a re-assessment of the associated OPG documents when they are submitted for acceptance prior the conduct of this activity.

During the licence period, OPG upgraded the domestic and fire water supply and sewage treatment infrastructure on the Darlington site. The specifications of the upgrade took into account the projected needs of the DNNP. CNSC staff assessed the changes and concluded that the upgrades were acceptable within the bounds of the DNNP licence. Future OPG site preparation activities will include continuation of the infrastructure to support the DNNP from the tie-in points from the shared Darlington site system.

Layout of areas, structures and systems

OPG is required to submit a site layout, per REGDOC-1.1.1. OPG has provided topographic figures to present the civil works as currently understood for the scope of the project. OPG has added a new commitment D-P-18, Proposed Layout of Structures in the Final Layout State (to the extent practicable) to the OPG DNNP Commitment Report [10]. CNSC staff will conduct an assessment of these OPG documents when they are submitted for acceptance.

Additionally, OPG has committed to performing an evaluation of site layout opportunities before site preparation begins, per commitments D-P-3.7 and D-P-14.1 in the DNNP Commitments Report [10]. CNSC staff acknowledge the new commitment D-P-18, and updates to commitments D-P-3.7 regarding protection of identified butternut trees and D-P-14 addressing the fish habitat compensation plan as they pertain to the layout of areas, structures and systems. CNSC staff will conduct an assessment of these OPG documents when they are submitted for acceptance prior the conduct of site preparation activities.

CNSC staff assessed all OPG submissions and conclude that the existing licensing basis and OPG commitments, with respect to the physical design of the nuclear facility, remain appropriate for the LTPS.

4.4.2 Conclusion

CNSC staff assessed the OPG information and documentation under the Physical Design SCA and found it sufficient to meet the regulatory requirements for a LTPS. CNSC staff conclude that OPG is qualified to carry out the licensed activities at the DNNP site and have appropriate plans to ensure adequate measures are in place prior to carrying out site preparation activities.

4.4.3 Recommendation

One standardized licence condition is included in the proposed licence. Licence condition 5.1 requires that the licensee implements and maintains a design program. Compliance verification criteria for this licence condition is included in the draft Licence Conditions Handbook (LCH).

4.5 Radiation Protection

The Radiation Protection SCA covers the implementation of a radiation protection 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 include:

- Application of ALARA;
- Worker dose control;
- Radiation protection program performance;
- Radiological hazard control;
- Estimated dose to public.

4.5.1 Discussion

The DNNP site is located within close proximity to the DNGS and Darlington Waste Management Facility (DWMF). OPG must ensure that workers are protected from potential exposure to very low levels of radiation from these facilities. CNSC staff reviewed OPG's application and noted that OPG has not sought approval to use nuclear substances during the proposed licence period.

OPG has committed to ensure the development of an Occupational Health & Safety (OHS) plan (Deliverable D-P-2.1). As the DNNP site is located within close proximity to the DWMF and DNGS facilities, this plan will address potential exposure of workers to very low levels of radiation as well as conventional hazards. Any resulting exposure to workers is expected to be a small fraction of the effective and equivalent dose limits for persons who are not Nuclear Energy Workers (NEWs) as a result of the licensed site preparation activities to be performed. Section 4.6 of this CMD has further information on OPG's provisions for Conventional Health and Safety.

The DNNP site will be integrated into OPG's Radiation Protection Program (N-PROG-RA-0013) per DNNP Commitment Report (commitment D-O-1) [10] as part of an application for a Licence to Operate. CNSC staff will conduct a re-assessment of these OPG documents when they are submitted for acceptance prior to the conduct of site preparation activities.

4.5.2 Conclusion

CNSC staff assessed the OPG information and documentation under the Radiation Protection SCA and found it meets the regulatory requirements for a LTPS. CNSC staff conclude that OPG is qualified to carry out the licensed activities at the DNNP site and have appropriate plans to ensure adequate measures are in place prior to carrying out site preparation activities.

4.5.3 Recommendation

One licence condition is included in the proposed licence. Licence condition 7.1 requires that the licensee implements and maintains a radiation protection program. Compliance verification criteria for this licence condition are included in the draft LCH.

4.6 Conventional Health and Safety

The Conventional Health and Safety SCA covers the implementation of a program to manage workplace safety hazards and to protect personnel and equipment.

4.6.1 Discussion

CNSC requires licensees to implement and maintain effective worker safety programs, commensurate with the activities being carried out, to promote and ensure a safe and healthy workplace for employees, minimizing the risk of occupational injuries and illnesses.

As OPG is not currently carrying out any site preparation activities, it does not yet have an Occupational Health and Safety Plan specific to site preparation activities. OPG is required to develop and submit an Occupational Health and Safety Plan specific to site preparation activities prior to the start of licensed activities (commitment D-P-2.1) [10]. This plan will apply to all OPG personnel and contractors conducting licensed activities. CNSC staff will conduct an assessment of these OPG documents when they are submitted for acceptance prior the conduct of site preparation activities.

CNSC staff have reviewed the application and supporting documents, and conclude that OPG has adequate provisions for Conventional Health and Safety for the current activities at DNNP.

4.6.2 Conclusion

CNSC staff assessment of OPG's application and supporting documents has found that OPG's provisions for conventional health and safety are in compliance with the regulatory requirements, given that no physical activities are currently taking place. Once physical activities commence, CNSC staff will focus on oversight of site preparation activities ensuring OPG's Occupational Health and Safety plan is effectively implemented.

CNSC staff conclude that OPG is qualified to carry out the licensed activities at the DNNP site and have appropriate plans to ensure adequate measures are in place prior to carrying out site preparation activities.

4.6.3 Recommendation

One standardized licence condition is included in the proposed licence. Licence condition 8.1 requires that the licensee implements and maintains a conventional health and safety program. Compliance verification criteria for this licence condition is included in the draft LCH.

4.7 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.

4.7.1 Discussion

OPG protects the environment from all activities conducted under its EHS Managed Systems program (OPG-PROG-0005). This program addresses the requirements for site preparation activities as well as the environmental monitoring and an EA follow up plan.

Since OPG's original application submitted in 2009 the CNSC published REGDOC-2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures, Version 1.2* and CSA published four new standards relevant to environmental protection:

- CSA N288.*4 Environmental Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills*;

- CSA N288.5 *Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills*;
- CSA N288.6 *Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mill;* and,
- CSA N288.*7 Groundwater Protection Programs at Class I Nuclear Facilities and Uranium Mines and Mills*.

CNSC staff reviewed OPG's corporate EHS Managed Systems program (OPG-PROG-0005) and confirmed it meets the requirements of REGDOC-2.9.1, CSA N288.4, CSA N288.5 and CSA N288.6. CNSC staff accepted OPG's implementation plan for CSA N288.7 as part of OPG's fleet wide implementation plan.

As described in Section 1.1 above, the JRP review process resulted in the development of the DNNP Commitments Report [10]. OPG has committed (commitment D-P-3 [10]) to establishing an Environmental Management and Protection Plan to ensure that site preparation activities are performed in a manner that protects the environment. CNSC staff expects the plan will include a systematic evaluation of the potential environmental effects associated with all anticipated work activities, and the implementation of measures that eliminate or mitigate risk to the environment. Commitment D-P-3 [10] remains outstanding and OPG will be required to fulfill this commitment before any site preparation activities are started. CNSC staff will conduct a re-assessment of these OPG documents when they are submitted for acceptance.

4.7.2 Conclusion

OPG selected to progress certain long-lead time activities related to meeting commitments regarding environmental protection and has actively engaged other provincial and federal regulators. As outlined in Section 3 above, OPG has completed ongoing work particularly in studies related to Bank Swallows and the aquatic environment. These studies have been reviewed and found to be satisfactory to the CNSC, ECCC and DFO.

CNSC staff conclude that OPG is qualified to carry out the licensed activities at the DNNP site and are working on developing appropriate plans to ensure adequate measures are in place prior to carrying out site preparation activities. CNSC staff will continue to assess results of ongoing OPG environmental studies and will conduct oversight activities ensuring OPG monitors and limits the impact to the environment during site preparation activities.

4.7.3 Recommendation

One licence condition is included in the proposed licence. Licence condition 9.1 requires that the licensee implements and maintains an environmental protection program. Compliance verification criteria for this licence condition is included in the draft LCH.

4.8 Emergency Management and Fire Protection

The Emergency Management and Fire Protection SCA covers emergency plans and emergency preparedness programs that exist for emergencies and for non-routine conditions. This area also includes any results arising from participation in emergency training exercises.

4.8.1 Discussion

Licensees are required to have plans in place for the protection of the health and safety of workers, the public and the environment in case of emergencies. This SCA includes conventional emergency and fire response. Fire protection operations, design and analysis are discussed in the appropriate SCA of operating performance, safety analysis or physical design.

Given the proximity of the DNGS and the DWMF to the area where site preparation activities will occur, OPG has taken into consideration potential risks that may arise in the event of an accident or malfunctions at these facilities.

OPG's Consolidated Nuclear Emergency Plan (CNEP) details responsibilities and concept of operations in the event of an emergency at the Darlington site, including site evacuation. CNSC staff have assessed OPG's submission and conclude that no gaps exist between OPG's Emergency Preparedness Program N-PROG-RA-0001 and the requirements of REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*. In addition, CNSC staff can confirm that the CNEP has been updated to reflect applicable regulatory documents, the Provincial Nuclear Emergency Response Plan (PNERP) and the PNERP Darlington Implementing Plan for the Darlington Nuclear Generating Station (2019).

OPG is required to implement an emergency response plan as well as communicate emergency response actions to be taken by construction site personnel in the event of an emergency. Emergency response could include instructing construction site personnel to shelter or evacuate, as determined by the Darlington Emergency Response Organization. In case of an emergency with offsite consequences, Public Protective Action Decisions, including decisions on sheltering or evacuation in the Provincial Planning Zones, are made by the Province of Ontario, and implemented locally by the Durham Emergency Management Organization. CNSC staff have assessed OPG's submission and information provided in this area. CNSC staff conclude that OPG has addressed the requirements of REGDOC-1.1.1 and provincial requirements for emergency planning.

OPG's CNEP references appropriate plans and procedures for managing a response in the event of a nuclear emergency to ensure adequate preparedness and a coordinated response. These include agreements which OPG has concluded with the Municipality of Clarington, Region of Durham and the Province of Ontario which outline how their emergency services will provide support to OPG in the event of an emergency. OPG has committed to continue meeting with these stakeholders on an annual basis. CNSC staff have assessed OPG's submission and conclude that OPG has appropriate agreements in place with municipal and regional authorities for emergency response.

OPG's original licence application [7] supported an Exclusion Zone of no more than 500m. Revised planning zones for the PNERP and new REGDOC-2.10.1, *Nuclear Emergency Preparedness and Response, Version 2* have not changed the Exclusion Zone determination. OPG has provided off-site planning authorities a revised Evacuation Time Estimate using the 2016 National Census Data with projections out to 2028. CNSC staff have assessed OPG's submission and confirm that the established exclusion zone is suitable for the DNNP.

Once a reactor design has been selected, nuclear safety analysis, inclusive of consequential events and reasonable combinations of independent events, will inform the emergency planning per OPG commitment deliverable D-O-2.1 in the DNNP Commitments Report [10]. CNSC staff will conduct a re-assessment of these OPG documents when they are submitted for acceptance prior to the conduct of site preparation activities.

OPG has identified the emergency plans and required deliverables to progress to LTPS activities and reflected these in the DNNP Commitments Report [10]. They are:

- DNNP Emergency Preparedness Plan;
- EPC Emergency Response and Evacuation Plan;
- EPC Fire Prevention and Response Plan;
- Evidence of OPG review and acceptance of EPC plans; and,
- Development of implementing procedures addressing OPG's Emergency Preparedness requirements for DNNP.

If OPG's licence is renewed, CNSC staff will continue to ensure that emergency plans for the Darlington site remain appropriate and effective and that deliverables required by OPG to be submitted after a design has been selected, will be thoroughly assessed. In particular, CNSC staff will focus on OPG's preparation of Emergency Preparedness procedures for emergency conditions such as unexpected radiological and non-radiological hazards, fires, and natural disasters (e.g., storms, floods, and earthquakes) during the transition from the DNNP Site Preparation Management System to the Nuclear Management System.

4.8.2 Conclusion

CNSC staff assessed the OPG information and documentation under the Emergency Management and Fire Protection SCA and found it sufficient to meet the regulatory requirements for a LTPS. CNSC staff conclude that OPG is qualified to carry out the licensed activities at the DNNP site and have appropriate plans to ensure adequate measures are in place prior to carrying out site preparation activities.

4.8.3 Recommendation

Two standardized licence conditions are included in the proposed licence. Licence condition 10.1 requires that the licensee implements and maintains an emergency preparedness program and licence condition 10.2 requires that the licensee implements and maintains a fire protection program. Compliance verification criteria for these licence conditions are included in the draft LCH.

4.9 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 area also covers the planning for decommissioning.

4.9.1 Discussion

Waste Management

OPG's site preparation activities do not involve the handling of radioactive materials and will not generate any radioactive wastes. All site preparation activities will take place outside the existing Protected Areas established on the sites for the DNGS and the DWMF. CNSC staff expect that radioactive materials will not be encountered during any site preparation activities.

To address any potential discovery issues during site preparation activities, CNSC staff have added compliance verification criteria in the draft LCH for licence condition 11.1, stating if nuclear substances above exemption quantities are encountered during site preparation activities, appropriate measures, such as OPG's corporate waste management program, must be put in place to manage any radioactive waste generated. In addition, appropriate measures for packaging and transport of nuclear substances must be put in place.

Exposure to hazardous substances that may be present and/or hazardous wastes generated as a result of site preparation activities will be limited to workers on site during standard construction processes. To manage the non-nuclear hazardous substances and waste generated by site preparation activities, OPG is committed to the development of a Hazardous Waste Management Plan/Procedure (commitment D-P-3.6) [10] prior to the commencement of site preparation activities. The completion of a comprehensive soils characterization program is a pre-requisite to the development of an overall Hazardous Waste Management Plan and will be completed prior to site preparation excavation and earth moving activities.

In addition, to manage spill prevention and response for non-nuclear materials, OPG commits to the development of a Spill Prevention and Response Plan/Procedure (commitment D-P-3.3) [10]. This will be completed prior to the commencement of licensed activities.

CNSC staff will conduct an assessment of these OPG documents when they are submitted for acceptance prior to the conduct of site preparation activities.

OPG carried out a review of DNNP documentation pertaining to Nuclear Waste Management and concluded that no changes to previously submitted information for nuclear waste management were needed.

CNSC staff assessed the information submitted and OPG's plans to address hazardous and radiological wastes. CNSC staff found that the plans and commitments in place are suitable to address the criteria of REGDOC-1.1.1 and other applicable regulatory requirements related to waste management in a timely manner as OPG progresses towards LTPS activities.

Decommissioning Plans

Financial Guarantees associated with decommissioning are discussed in Section 5.4 of this CMD.

OPG developed a preliminary decommissioning plan (PDP) for the site preparation stage to describe the decommissioning of the site in the event the project is cancelled after the site has been prepared for construction. In addition, a PDP for the station end-of-life was also developed to address aspects of decommissioning. Both PDPs are managed through the OPG Decommissioning Program.

OPG has committed to updating the PDP for site preparation (commitment D-P- 13.1) [10] when OPG applies for authorization to commence site preparation activities to allow more substantive site preparation work.

CNSC staff concur with this commitment and to address the update of the PDP, the draft LCH compliance verification criteria for licence condition 11.2, states that the decommissioning plan must be kept current to reflect any changes in the site or nuclear facility and revised at a minimum every five years, or as specified by the Commission.

OPG reviewed the PDPs submitted for site preparation and for end-of-life station against the decommissioning planning requirements and guidance of REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*. The review identified only minor gaps in compliance of the existing PDPs against CSA N294-09 *Decommissioning of facilities containing nuclear substances*. OPG proposes to address these minor gaps when the PDPs are revised as committed in the DNNP Commitment Report (commitment D-P-13.1) [10]. CNSC staff will conduct a re-assessment of these OPG documents when they are submitted for acceptance prior to the conduct of site preparation activities.

4.9.2 Conclusion

CNSC staff assessed the OPG information and documentation under the Waste Management SCA and found it sufficient to meet the regulatory requirements for a LTPS. CNSC staff conclude that OPG is qualified to carry out the licensed activities at the DNNP site and have appropriate plans to ensure adequate measures are in place prior to carrying out site preparation activities.

4.9.3 Recommendation

Two standardized licence conditions are included in the proposed licence. Licence condition 11.1 requires that the licensee implements and maintains a waste management program and licence condition 11.2 requires that the licensee implements and maintains a decommissioning plan. Compliance verification criteria for these licence conditions are included in the draft LCH.

4.10 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.

4.10.1 Discussion

OPG's Security Program is documented in N-PROG-RA-0011 Nuclear Security and supports OPG's need to manage residual risk to the public created by the operation of its facilities, protect its assets and respond to emergencies that impact operations and the public. Key elements of this program include response to threats and maintaining compliance with legislative requirements, while minimizing the adverse impact on legitimate staff and plant operations.

OPG conducted a nuclear security review in support of the DNNP licence renewal that included revision of the Site Selection Threat and Risk Assessment (SSTRA) [20] and an analysis to determine if there are any program gaps with respect to current regulations, codes and standards applicable to the site preparation licensing stage of the project. OPG revised the SSTRA [20] in accordance with the guidance provided in REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*. The revised SSTRA stated that no site characteristics would impede the development and implementation of adequate security measures for all DNNP licensing stages.

In addition, OPG's application included supporting information on the management of prescribed information, site security measures, access control, and site access clearance. CNSC staff assessed OPG's submissions related to security and conclude that OPG meets the requirements of *Nuclear Security Regulations,* REGDOC-1.1.1 and REGDOC-2.12.2, *Site Access Security Clearance*.

OPG has an agreement with the Durham Regional Police Service (DRPS) that documents arrangements with DRPS to provide an offsite response to OPG facilities located on the Pickering and Darlington sites. The agreement ensures the necessary resources are available to address design basis security events.

OPG conducts drills and exercises that include integrated response with the DRPS offsite response force. CNSC staff have reviewed this agreement and conclude that OPG has appropriate agreements in place with regional police services for offsite response.

OPG's Cyber Security Program (OPG-PROG-0042) is designed to implement OPG's corporate Cyber Security Policy (OPG-POL-0035). Information technology and industrial control systems are managed in a secure, vigilant and resilient manner that minimizes cyber risks to information assets, renewable generation and nuclear facilities. Nuclear Cyber Security (N-PROC-RA-0135) ensures that the secure operations of computer systems associated to the industrial control systems within OPG nuclear facilities. Cyber security is applied to plant systems including those used to ensure safe operations and to provide physical security of OPG nuclear facilities.

CNSC staff reviewed OPG's cyber security program and conclude that the program meets the security requirements of REGDOC-1.1.1.

OPG has also made commitments to implement specific provisions regarding site access and physical security (e.g., fencing and lighting), as documented in commitment D-P-7, Site Security Plan [10]. CNSC staff will conduct an assessment of these OPG documents when they are submitted for acceptance prior the conduct of site preparation activities.

CNSC staff assessed the information submitted in the application and in supporting documents and concluded that the information fully addressed all applicable regulatory requirements pertaining to security.

If OPG's licence is renewed, CNSC staff will continue to monitor OPG's implementation of security provisions needed to ensure compliance with the *Nuclear Security Regulations* for LTPS activities and to address related REGDOCs, applicable codes and standards as well as any additional measures required to protect personnel, information and physical assets against security risks identified in the SSTRA.

4.10.2 Conclusion

CNSC staff assessed the OPG information and documentation under the Security SCA and found it sufficient to meet the regulatory requirements for a LTPS. CNSC staff conclude that OPG is qualified to carry out the licensed activities at the DNNP site and have appropriate plans to ensure adequate measures are in place prior to carrying out site preparation activities.

4.10.3 Recommendation

One standardized licence condition is included in the proposed licence. Licence condition 12.1 requires that the licensee implements and maintains a security program. Compliance verification criteria for this licence condition is included in the draft LCH.

4.11 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). This SCA comprises a safeguards program and non-proliferation requirements.

This CMD covers the following specific areas of the Safeguards and Non-proliferation SCA:

- Nuclear material accountancy and control;
- Access and assistance to the International Atomic Energy Agency (IAEA);
- Operational and design information;
- Safeguards equipment, containment and surveillance; and,
- Import and export.

4.11.1 Discussion

CNSC staff reviewed OPG programs in place to facilitate Canada's compliance with all applicable safeguards agreements and to ensure compliance with IAEA requirements regarding Safeguards and Non-Proliferation. Note that 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*.

OPG has indicated that they will meet REGDOC-2.13.1, *Safeguards and Nuclear Material Accountancy* requirements such as making 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, including the preparation for new facilities, and providing access and assistance to IAEA inspectors for complementary access. Specifically for this project, OPG will be required to engage with CNSC staff during the proposed licence period to support development of a preliminary Design Information Questionnaire (DIQ) once a reactor technology has been selected.

4.11.2 Conclusion

CNSC staff conclude the OPG information and documentation under the Safeguards and Non-Proliferation SCA and found it sufficient to meet the regulatory requirements for a LTPS. CNSC staff will engage with OPG regarding the development of a preliminary DIQ once a reactor technology is selected. CNSC staff conclude that OPG is qualified to carry out the licensed activities at the DNNP site and have appropriate plans to ensure adequate measures are in place prior to carrying out site preparation activities.

4.11.3 Recommendation

One standardized licence condition is included in the proposed licence. Licence condition 13.1 requires that the licensee implements and maintains a safeguards program. Compliance verification criteria for this licence condition is included in the draft LCH.

5 OTHER MATTERS OF REGULATORY INTEREST

5.1 Indigenous Consultation

The common law duty to consult with Indigenous peoples 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 licensing decisions under the NSCA uphold the honour of the Crown and consider Indigenous peoples' potential or established Aboriginal and/or treaty rights pursuant to section 35 of the *Constitution Act, 1982* [21].

5.1.1 Discussion

CNSC staff have identified the First Nation and Métis groups who may have an interest in the proposed renewal of DNNP LTPS. These groups include the Mississauga of the Credit First Nation, the Métis Nation of Ontario – Region 8, the Mohawks of the Bay of Quinte and Williams Treaties First Nations (Alderville First Nation, Curve Lake First Nation, Hiawatha First Nation, Mississauga of Scugog Island First Nation, Chippewas of Beausoleil First Nation, Chippewas of Georgina Island First Nation, and Chippewas of Rama First Nation). These groups were identified as they all have previously expressed interest in being kept informed of CNSC licensed activities occurring in proximity to their traditional and/or treaty territories. CNSC staff note that these groups were engaged by CNSC as part of the EA and JRP process.

During the licensing period, OPG addressed commitment D-P-11[10] for the provision of Archaeological Excavation Reports. OPG hired a licensed archaeologist to survey the DNNP lands in 2010/11 to confirm if there were Indigenous and Euro-Canadian heritage artefacts on DNNP lands. The survey revealed one Indigenous site dating from 6000 to 4000 years BCE. Thirty-one Indigenous artefacts from one site and thousands of historic artefacts from two pioneer farmsteads were subsequently analyzed, described and catalogued. Excavation and documentation were sufficient to obtain Ministry of Tourism, Culture and Sport clearance for OPG to proceed with site preparation on these sites in 2011.

At the same time, Indigenous communities with rights and/or interests in the area, primarily representatives of the Williams Treaties First Nations, were consulted throughout the heritage assessment. Once the Ministry accepted the Archaeologist's Report, all the artefacts were packaged and transferred to the Ontario Sustainable Archaeological Repository in London for safe, long-term storage.

Since then, the artefacts have continued to be held at the Archeological Repository. At the request of Williams Treaties First Nations, OPG has liaised between the Williams Treaties First Nations and the Ministry of Heritage, Sport, Tourism and Culture Industries to help support the eventual repatriation of the artefacts for curation and display at Curve Lake First Nation. OPG intends that OPG and Curve Lake First Nation will collaborate to rotate the artifacts at the planned Darlington Campus Building as part of OPG's recognition of the location's Indigenous history.

CNSC staff sent letters of notification in October 2020 to the Indigenous communities identified above. The letter provided information regarding the proposed licence renewal application, the availability of participant funding to facilitate participation in the hearing process, and details on how to participate in the Commission's public hearing process proposed for June 2021.

CNSC staff conducted follow-ups by phone calls and e-mails with the identified groups in November 2020 to ensure they had received the letters and to answer any questions about the regulatory process and how to participate in the Commission proceedings. Additional communication with identified groups conveyed updated information pertaining to the specific hearing dates and information on the participant funding opportunity through the CNSC's Participant Funding Program (PFP). In February 2021, CNSC staff met virtually with members of the Williams Treaties First Nations, including Curve Lake and Hiawatha First Nations, the Mohawks of the Bay of Quinte, as well as the Métis Nation of Ontario (separately) to discuss the DNNP licence renewal and related regulatory review process. CNSC staff answered all questions related to the history of the DNNP Project and the current licence renewal application.

To date, CNSC staff have not been made aware of any specific concerns concerning OPG's licence renewal application for the DNNP. CNSC staff have engaged with interested Indigenous communities over the licensed period and is committed to continuing to address concerns and provide information pertaining to the licence renewal.

CNSC is committed to information sharing and maintaining long-term relationships with the Indigenous communities who have interests in relation to activities at the Darlington nuclear site.

In order to maintain meaningful long-term relationships, CNSC recognizes that it is important to discuss topics of interest and address concerns with Indigenous communities over the lifespan of facilities.

CNSC staff continues to develop a structured, formalized approach to ensure continued engagement and information sharing with all interested Indigenous communities and organizations regarding issues related to the DNNP as well as Pickering and Darlington Generating Stations. In the spirit of these long-term relationships, CNSC staff have informed the identified Indigenous communities regarding CNSC staff's DNNP renewal and have provided more information directly in meetings with these groups when requested. In addition, in February 2021, CNSC staff and Curve Lake First Nation signed a Terms of Reference for Long-Term Engagement and collaboration.

CNSC staff have observed that OPG is working to strengthen its relationship with interested Indigenous communities regarding nuclear operations and projects and continues to work with communities to resolve any issues and concerns. OPG has continued providing presentations, tours and regular information updates to interested Indigenous communities regarding its operations and activities throughout the licence period, and maintains a public Information Centre. OPG continues to share the results of its annual nuclear station environmental monitoring program with Indigenous communities that they are engaged with. OPG has previously offered to involve Indigenous communities in its environmental monitoring activities and will continue to work with Indigenous communities having recently expressed interest in being involved, through the DNNP planning activities, including the gathering of Indigenous Knowledge and Land Use information relevant to the Darlington site and other OPG operations.

CNSC staff note that OPG continues to develop an ongoing, focused relationship with the four closest Williams Treaties First Nations, the Mohawks of the Bay of Quinte and the Métis Nation of Ontario Region 8 regarding issues related to DNNP. OPG has involved Indigenous communities in the environmental monitoring processes as well as through Indigenous Employment Programs, career fairs, job posting and station tours. As well, in eastern Ontario, OPG has an ongoing partnership since 2015 with Kagita Mikam Aboriginal Employment and Training, which provides access to candidates across its extensive network. OPG is considering development of a trades rotation program related to DNNP to provide Indigenous youth trade experiences. CNSC staff will continue to monitor, and, where appropriate, participate in OPG's engagement activities.

REGDOC-3.2.2, Indigenous Engagement, Version 1.1, published in August 2019, sets out requirements and guidance for licensees whose proposed projects may raise the Crown's duty to consult. While the CNSC cannot delegate its obligation, it can delegate procedural aspects of the consultation process to licensees, where appropriate. The information collected and measures proposed by licensees to avoid, mitigate or offset adverse impacts from the proposed licence renewal, may be used by CNSC staff in meeting its consultation obligations. OPG's application for renewal does not raise the formal requirements of REGDOC-3.2.2. However, CNSC staff recognize that OPG has a well-established engagement and communications program with interested Indigenous communities and encourages OPG to continue engaging with these communities regarding its facilities and activities including the DNNP licence renewal application.

5.1.2 Conclusion

CNSC staff continue to be satisfied with the level and quality of Indigenous engagement conducted by OPG regarding the DNNP. As OPG's renewal application does not include any new activities that could cause impacts on the environment, or change in the proposed project activities footprint, CNSC staff conclude that it will not cause any adverse impacts to any potential or established Indigenous and/or treaty rights.

CNSC conducted appropriate engagement and outreach in relation to this licence renewal application with all interested Indigenous communities and is committed to meaningful, ongoing engagement with Indigenous communities that have an interest in CNSC regulated facilities and activities.

5.2 Public Engagement

As per CNSC public information process, CNSC staff informed the public of the public Commission hearing and availability of participant funding via the CNSC website, email subscription list, social media channels and letters to Indigenous Groups.

The CNSC made funding available through its PFP to assist Indigenous peoples, members of the public, and stakeholders in participating in the regulatory process for OPG's renewal application. This funding was offered to review OPG's licence renewal application [2] and associated documents and to prepare for and participate in the Commission's public hearing.

The PFP opportunity was open from October 15 to November 30, 2020. A Funding Review Committee, independent from CNSC staff, reviewed the funding applications received, and made recommendations on the allocation of funding to eligible recipients. Based on the recommendations from the Funding Review Committee, the CNSC awarded a total of $81,452.38 in funding to the following groups:

- Mohawks of the Bay of Quinte;
- Curve Lake First Nation;
- Dr. Jerry Cuttler;

- Northwatch;
- Canadian Association of Nuclear Host Communities;
- Canadian Environmental Law Association;
- Canadian Nuclear Workers Council.

In accordance with section 17 of *the Canadian Nuclear Safety Commission Rules of Procedure*, a Notice of Public Hearing has been issued and posted on the CNSC website inviting written comments and requests for appearances before the Commission. The CNSC also communicated information about the regulatory process for the renewal of OPG's DNNP to the public, stakeholders and Indigenous communities through various methods including feature articles, graphics on the CNSC website, CNSC open houses and social media.

5.2.1 Conclusion

CNSC staff continue to inform the public of our regulatory activities through regular website updates, publicly webcast Commission proceedings, social media and regular discussion with key audiences near the DNNP.

CNSC staff encourage the public to participate in the Commission's public hearing. The CNSC offered assistance to interested members of the public, Indigenous peoples, and other stakeholders, through the PFP, to prepare for and participate in the Commission's public hearing.

5.3 Cost Recovery

It is a requirement of the NSCA under paragraph 24(2)(c), that the prescribed fee accompanies the licence application. The *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 the CRFR, which is based on "Regulatory Activity Plan Fees". OPG's application for the licence renewal of the DNNP is not a new application and, as such, the applicant is not required to submit the initial fee of $25,000 as described in paragraph 7(1)(a). In this case, OPG is subject to paragraph 5(2) of the CRFR, which relates to quarterly invoices sent to licensees.

After assessing CNSC records, CNSC staff conclude that OPG is in good standing with respect to meeting CRFR requirements. Based on OPG's previous performance, there is no concern over payment of future cost recovery fees.

5.4 Financial Guarantees

Under subsection 24(5) of the NSCA, OPG is required to provide a financial guarantee (FG) in a form that is acceptable to the Commission. *General Nuclear Safety and Control Regulations*, paragraph 3(1)(*l*) stipulates that, "an application for a licence shall contain a description of any proposed FG related to the activity for which a licence application is submitted." CNSC guide document G-206 *Financial Guarantees for the Decommissioning of Licensed Activities,* covers the provision of FGs for decommissioning activities.

5.4.1 Discussion

As discussed in section 4.9, OPG has committed to update the PDP as part of the licence to construct application. This commitment remains unchanged from OPG's 2009 application [7]. CNSC staff continue to find the proposal acceptable, as there are currently no licensed activities conducted at the site. OPG's FG is currently valued at $0.00, as its licence does not include work that would require decommissioning of the site should the project be cancelled.

The FG for decommissioning shall be reviewed and revised by the licensee every five years, following a revision of the PDP that significantly impacts the financial guarantee or if required by the Commission. OPG's next update of the FG is expected in 2022.

As described in deliverable the DNNP Commitments Report [10], OPG will propose an appropriate financial instrument commensurate with decommissioning financial liabilities prior to requesting authorization to conduct licensed activities at the DNNP site.

5.4.2 Conclusion

CNSC staff conclude that OPG's original PDP and the assessment completed as part of the JRP review process remains valid and in line with CNSC staff expectations in G-206 *Financial Guarantees for the Decommissioning of Licensed Activities, June 2000*. OPG's current FG of $0.00 is adequate as there are no licensed activities that would require decommissioning activities should the project be cancelled.

5.4.3 Recommendation

One standardized licence condition is included in the proposed licence. Licence condition G.5 requires that the licensee maintain a FG for decommissioning that is acceptable to the Commission. Compliance verification criteria for this licence condition are included in the draft LCH.

5.5 Improvement Plan and Significant Future Activities

5.5.1 Discussion

DNNP Commitments Report

The JRP directed 67 recommendations to various responsible authorities including federal authorities, the Government of Ontario, the Municipality of Clarington, and OPG. In its response to the JRP EA report, the Government of Canada (GOC) accepted or accepted the intent of all of the JRP recommendations within its jurisdiction. The GOC in its response (https://iaac-aeic.gc.ca/052/document-html-eng.cfm?did=55542) committed [7] to ensuring the implementation of appropriate follow-up programs and mitigation measures resulting from the JRP process and documented in the JRP EA Report [5]. The GOC response described the criteria against which responsible parties determine how to meet the recommendations.

A number of recommendations are directed to OPG and are documented and managed through the DNNP Commitment Report [10].

Appendix E provides the progress of the JRP recommendations to date. CNSC staff will continue to monitor and verify that OPG fulfills the recommendations and commitments made during the JRP review process as outlined in the DNNP Commitments Report. CNSC staff will report on the progress of the commitments through the *Regulatory Oversight Report on Canadian Nuclear Generating Sites*. If OPG deviates from its commitments, CNSC staff would take regulatory action and report this to the Commission through the Status Report on Power Reactors, provided at each Commission meeting, or as a stand-alone memorandum to the Commission.

Technology Selection

OPG has not proposed any changes to the scope of licensed activities in its licence renewal application. The renewal of OPG's PRSL does not require reactor technology selection as this information is not required to reassess and confirm site suitability.

OPG has announced that it will select a reactor technology in the near future and that it plans to submit a licence to construction application in 2022.

The GOC response [9] to the JRP recommendations committed the CNSC (as the Regulatory Authority) to determine whether a new environmental review would be required if the selected reactor technology was fundamentally different from the original assessment, prior to construction. When OPG submits documentation regarding technology selection CNSC staff will review and confirm whether OPG has clearly demonstrated that reactor technology selected remains within the bounds of the JRP EA report and complies with CNSC regulatory requirements outlined in REGDOC 1.1.1.

If OPG submits an application for a licence to construct that includes any changes to the predicted environmental effects from any revised design and/or baseline information, CNSC staff will conduct an environmental review

determination to assess whether the proposed project is outside the bounds of the scope, predictions and conclusions of the previous EA. If CNSC staff determine that, the proposed project is outside the bounds of the previous EA scope, predictions and conclusions a further review will be required. CNSC staff would then determine what type of environmental review would be required

5.5.2 Conclusion

The CNSC's regulatory framework is comprehensive, robust and flexible enough to assess new and innovative technologies. Under the NSCA, the Commission can only issue a licence if it is confident that environment, workers and the health and safety of public are protected. The next steps for the DNNP are contingent on OPG selecting a reactor technology. CNSC staff note that an application for a licence to construct requires a reactor technology decision by OPG and a licence to construct can only be issued by the Commission, following the CNSC public hearing process.

CNSC staff expects OPG to continue to engage and communicate its current and future plans with the public and Indigenous Groups. As outlined in REGDOC-3.5.1, *Information Dissemination: Licensing Process for Class I Nuclear Facilities and Uranium Mines and Mills*, Version 2 and REGDOC-3.2.2, *Indigenous Engagement*, Version 1.1, CNSC strongly encourages OPG to begin this work and initiate discussions with the public, Indigenous peoples and the CNSC as early as possible.

5.5.3 Recommendation

CNSC staff have proposed site-specific licence condition 15.1 to ensure OPG implements the mitigation measures proposed and commitments made during the JRP review process. Proposed licence condition 15.2 requires OPG to implement and maintain an environmental assessment follow-up program. CNSC staff will report on the progress of the commitments and environmental assessment follow-up through the *Regulatory Oversight Report on Canadian Nuclear Generating Sites*. If OPG deviates from its commitments, CNSC staff would take regulatory action and report this to the Commission through the Status Report on Power Reactors, provided at each Commission meeting, or as a stand-alone memorandum to the Commission.

5.6 Ontario Power Generation's Public Information Program

A public information and disclosure program (PIDP) is a regulatory requirement for licence applicants and licensees of Class I nuclear facilities. These requirements are found in REGDOC-3.2.1, *Public Information and Disclosure*.

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 course of 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.

The DNNP PIDP is based on OPG's Darlington long-standing public information program, which meets the regulatory requirements of REGDOC-3.2.1. CNSC staff regularly report on the performance of OPG's Darlington PIDP through the *Regulatory Oversight Report for Canadian Nuclear Power Generating Sites* noting that the PIDP for OPG consistently meets CNSC requirements and expectations.

5.6.1 Discussion

OPG has augmented its public information program for the DNNP to include activities and/or stakeholders potentially interested in DNNP, but not necessarily interested in the Darlington program. These activities include:

- Information sharing online and at existing facilities and public information center;
- Social media presence;
- Community outreach activities such as welcome package to new residents, the OPG annual open house, presentations and site bus tours of the Darlington site (including the DNNP site) to community groups, key stakeholders, industry partners and the public;
- Quarterly Neighbours Newsletter for the Darlington Nuclear station, distributed in a 10 km radius and posted online;
- Local access to OPG's information center to foster relationships in the community; and,
- Participation in local community groups including Durham Nuclear Health Committee and the Darlington Community Advisory Council.

OPG has committed to provide a Communications, Consultation and Stakeholder Relations Program to the CNSC, no later than 60 days prior to commencement of licensed activities. This commitment is tracked as part of the DNNP Commitments Report under licence condition 15.1.

5.6.2 Conclusion

CNSC staff confirm that OPG's PIDP for the DNNP meets the regulatory requirements described in REGDOC-3.2.1, *Public Information and Disclosure*. CNSC staff continue to oversee OPG's implementation of the PIDP to ensure that it meets obligations regarding disseminating and notifying its target audiences of operational changes, and impacts on health, safety and the environment specific to its licensed activities.

5.6.3 Recommendation

Standardized licence condition G.6 has been included in the proposed licence that requires the licensee to implement and maintain a PIDP.

5.7 Nuclear Liability Insurance

There is no requirement for nuclear liability insurance for a LTPS as this activity is not a nuclear installation and as such, the *Nuclear Liability and Compensation Act* (NLCA) does not apply. The NLCA would apply should OPG apply and be successful in obtaining a Power Reactor Operating Licence.

5.8 Delegation of Authority

The Commission may include in a licence any condition it considers necessary for the purposes of the NSCA [4]. The Commission may delegate authority to CNSC staff with respect to the administration of licence conditions, or portions thereof.

There is one proposed licence condition in the proposed licence that contains the phrase "the Commission, or person authorized by the Commission":

- LC 3.2 Reporting Requirements

CNSC staff recommend that the Commission delegate its authority for the purposes described to the following staff:

- Director, New Major Facilities Licensing Division;
- Director General, Directorate of Regulatory Improvement and Major Projects Management; and,
- Executive Vice-President and Chief Regulatory Operations Officer, Regulatory Operations Branch.

6 OVERALL CONCLUSIONS AND RECOMMENDATIONS

CNSC staff have concluded the following with respect to paragraphs 24(2), (4) (a) and (b) of the, NSCA in that OPG:

1. Is qualified to carry on the activities authorized by the licence;
2. Will, in carrying out these activities, 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.

Based on the above conclusions, CNSC staff recommend the Commission:

3. Renew, pursuant to section 24 of the NSCA, the power reactor site preparation licence, with amendments PRSL 18.00/2031, authorizing OPG to carry out the activities listed in Part IV of the proposed licence from August 18, 2021, to August 17, 2031;
4. Delegate authority as set out in Section 5.8 of this CMD.

REFERENCES

1. Canadian Environmental Assessment Act (CEAA) 1992
2. OPG Darlington New Nuclear Project Power Reactor Site Preparation Licence. Renewal Application June 2020 (application to renew) e-Doc 6330102.
3. PRSL Nuclear Power Reactor Site Preparation Licence OPG New Nuclear at Darlington Generating Station (the initial site licence) e-Doc 3990795.
4. Nuclear Safety and Control Act (NSCA) 1997
5. Joint Review Panel for the Darlington New Nuclear Power Plant Project, Environmental Assessment Report, August 2011, e-Doc 3784878.
6. OPG EIS Environmental Impact Statement New Nuclear – Darlington Environmental Assessment, September 2009, NK054-REP-07730-00029, e-Doc 3437533.
7. Ontario Power Generation Application for a Licence to Prepare Site for the Future Construction of OPG New Nuclear at Darlington, September 2009, e-Doc 3437174.
8. Guidelines for the Preparation of the Environmental Impact Statement for Ontario Power Generation's Darlington New Nuclear Power Plant Project, January 2009, e-Doc 3310805.
9. GOC response to JRP EA Report, e-Doc 3994967.
10. OPG Darlington New Nuclear Project Commitments Report NK054-REP-01210-00078-R006, February 2021, e-Doc 6427485.
11. CNSC CMD 18-M55, Mid-Term Report on Results of Compliance Activities and Performance of Ontario Power Generation's Darlington New Nuclear Project, November 2018, e-Doc 5623630.
12. 2019 Bank Swallow Monitoring Bank Swallow Evaluation Area and Bond Head Bluffs OPG Document: NK054-REP-07730-0816563, February 2020, e-Doc 6382711.
13. Province of Ontario Endangered Species Act (ESA) *2007*
14. Species at Risk Act (SARA) *2002*
15. (2019 PSHA) Update of the OPG Darlington Site Probabilistic Seismic Hazard Assessment for the Darlington Risk Assessment (DARA), NK38-REP-03611-10041 R002, Oct 24, 2019, e-Doc 6045241.
16. (2009 PSHA) Site Evaluation of the OPG New Nuclear at Darlington - Probabilistic Seismic Hazard Assessment, NK054-REP-01210-00014-R001, October 9, 2009, e-Doc 3437351.

17. Letter from M. Knutson to C. Carrier, Summary of the updates from the 2009 PSHA to the 2019 PSHA, Attachment 2, DNNP PRSL Renewal – OPG Responses to CNSC Staff Additional Requests related to Consolidated Information Requests #5, 8, 9, 11 and 12 NK054-CORR-00531-10560, December 21, 2020, e-Doc 6450487.

18. Licence Conditions Handbook, OPG New Nuclear at Darlington Generating Station, Nuclear Power Reactor Site Preparation Licence, LCH-PRSL-DNNP-R002, e-Doc 4416070.

19. (DARA 2019) Letter from S. Gregoris to Ms. N. Riendeau, "Darlington NGS – Submission of the Darlington Hazard Screening Analysis – Darlington Probabilistic Safety Assessment Update", NK38-REP-03611-10043-R003, May 5, 2019, e-Doc 5948235.

20. OPG Reports, "Security Protected Reports in Support of DNNP Licence Application to Renew the PRSL" - under secure submission.

21. Constitution Act, 1982

22. Impact Assessment Act, 2019

GLOSSARY

ALARA	As Low as Reasonably Achievable
BE	Below Expectations
Bq	Becquerel
CANDU	Canada Deuterium Uranium
CEAA	Canadian Environmental Assessment Act
CMD	Commission Member Document
CNEP	Consolidated Nuclear Emergency Plan
CNSC	Canadian Nuclear Safety Commission
CRFR	Cost Recovery Fees Regulations
CROO	Chief Regulatory Operation Officer
CSA	Canadian Standards Association
DBA	Design Basis Accident
DFO	Fisheries and Oceans Canada
DIQ	Design Information Questionnaire
DNGS	Darlington Nuclear Generation Station
DNNP	Darlington New Nuclear Project
DRPS	Durham Regional Police Service
DWMF	Darlington Waste Management Facility
EA	Environmental Assessment
EC	Environment Canada
ECCC	Environment and Climate Change Canada
EHS	Environment, Health and Safety
EIS	Environmental Impact Statement
EMS	Environment Management System
EPC	Engineering, Procurement and Construction
ESA	Endangered Species Act
FG	Financial Guarantee
GNSCR	General Nuclear Safety and Control Regulations
GOC	Government of Canada

H	High
HADD	Harmful Alteration, Disruption or Destruction (of fish habitat)
hr	Hour
IAA	Impact Assessment Act
IAAC	Impact Assessment Agency of Canada
IAEA	International Atomic Energy Agency
JRP	Joint Review Panel
km	Kilometers
L	Liter
L	Low
LC	Licence Conditions
LCH	Licence Conditions Handbook
LTPS	Licence to Prepare Site
m	Meters
M	Moderate
MOU	Memorandum of Understanding
mSv	Millisievert
NEW	Nuclear Energy Worker
NGS	Nuclear Generating Station
NLCA	Nuclear Liability and Compensation Act
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
NRCan	National Resources Canada
NSCA	Nuclear Safety and Control Act
NWMO	Nuclear Waste Management Organization
OHS	Occupational Health and Safety
OPEX	Operating Experience
OPG	Ontario Power Generation
OPGN	OPG Nuclear
PDP	Preliminary Decommissioning Plan
PFP	Participant Funding Program

PIDP	Public Information and Disclosure Program
PNERP	Provincial Nuclear Emergency Response Plan
PRSL	Power Reactor Site Licence
PSHA	Probabilistic Seismic Hazard Assessment
REGDOC	Regulatory Document
RSA	Railway Safety Act
SA	Satisfactory
SARA	Species at Risk Act
SCA	Safety and Control Area
SSTRA	Site Selection Threat and Risk Assessment
UA	Unacceptable

A. RISK RANKING

The CNSC uses a risk-informed regulatory approach in the management and control of regulated facilities and activities. CNSC staff have therefore established an approach to identifying appropriate levels of regulatory monitoring and control for specific classes of licensed facilities and types of licensed activities based on risk ranking.

Risk ranking is applied to each Safety and Control Area (SCA), and is determined by considering the probability and consequence of adverse incidents associated with each SCA as it relates to the given facility and activity type.

The methodology used to determine risk ranking is based on ISO.IEC 31010:2009 – *Risk management – Risk assessment techniques*. This document provides guidance on the selection and application of techniques for assessing risk, and can be generally applied to the CNSC risk-informed regulatory approach.

In Section 2.2 of this Commission Member Document (CMD), in the Relevant Safety Control Areas table, the "Risk Ranking" column shows a high (H), moderate (M) or low (L) indicator for each SCA that is relevant to the current facility and activities being addressed in this CMD. The risk rankings are not static and will change over time for a given facility and activities (e.g., facilities age, facilities and equipment are upgraded, activities cease or begin, licensees change, technology and programs mature, knowledge and understanding of impacts and probabilities increase, etc.).

The following matrix provides a high-level overview of risk ranking, and the management and monitoring approach associated with the various degrees of risk.

APPROACH TO ASSESSING AND MANAGING POTENTIAL RISK			
CONSEQUENCE	**MANAGEMENT/MONITORING APPROACH**		
Significant Impact	Considerable management of risk is required	Must manage and monitor risk with occasional control	Extensive management is essential. Constant monitoring and control
Moderate Impact	Occasional monitoring	Management effort is recommended	Management effort and control is required
Low Impact	Random monitoring	Regular monitoring	Manage and monitor
Probability of Occurrence	Unlikely to Occur	Might Occur	Expected to Occur

RISK RANKING SCALE					
L	Low Risk	**M**	Moderate Risk	**H**	High Risk

On this basis, a high-risk SCA would be subject to increased regulatory scrutiny and control while a low-risk SCA would generally require minor verification and control.

B. RATING LEVELS

Satisfactory (SA)

Safety and control measures implemented by the licensee are sufficiently effective. In addition, compliance with regulatory requirements is satisfactory. Compliance within the SCA meets requirements and CNSC expectations. Any deviation is minor and any issues are considered to pose a low risk to the achievement of regulatory objectives and CNSC expectations. Appropriate improvements are planned.

Below Expectations (BE)

Safety and control measures implemented by the licensee are marginally ineffective. In addition, compliance with regulatory requirements falls below expectations. Compliance within the SCA deviates from requirements or CNSC expectations to the extent that there is a moderate risk of ultimate failure to comply. Improvements are required to address identified weaknesses. The licensee is taking appropriate corrective action.

Unacceptable (UA)

Safety and control measures implemented by the licensee are significantly ineffective. In addition, compliance with regulatory requirements is unacceptable and is seriously compromised. Compliance within the SCA is significantly below requirements or CNSC expectations, or there is evidence of overall non-compliance. Without corrective action, there is a high probability that the deficiencies will lead to unreasonable risk. Issues are not being addressed effectively, no appropriate corrective measures have been taken and no alternative plan of action has been provided. Immediate action is required.

C. BASIS FOR THE RECOMMENDATION(S)

C.1 Regulatory Basis

The recommendations presented in this Commission Member Document (CMD) are based on compliance objectives and expectations associated with the relevant Safety and Control Areas (SCAs) and other matters. The regulatory basis for the matters that are relevant to this CMD are as follows.

Site Evaluation

Site evaluation covers a substantial part of an Environmental Assessment (EA) conducted under federal environmental assessment legislation. Information gathered through the site evaluation process is used to support the EA process, and will be reviewed by the CNSC during all stages of licensing, in particular for the Licence to Prepare Site LTPS).

Applicable regulatory basis:

- REGDOC-1.1.1, *Site Evaluation and Site Preparation for New Reactor Facilities*.

Management system

The management system SCA covers the framework that establishes the processes and programs required to ensure an organization achieves its safety objectives, continuously monitors its performance against those objectives, and fosters a healthy safety culture.

Applicable regulatory basis:

- *General Nuclear Safety and Control Regulations*, paragraphs 3(1)(i) and (k) and 12(1)(a) through (j); and,
- *Class I Nuclear Facilities Regulations*, paragraphs 3(d) and 4(d).

Operating performance

The operating performance SCA includes an overall review of the conduct of the licensed activities and the activities that enable effective performance.

Applicable regulatory basis:

- *Class I Nuclear Facilities Regulations, paragraphs 3(c), 4(a) and 4(e)*.

Safety analysis

The safety analysis SCA 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 preventive measures and strategies in reducing the effects of such hazards.

Applicable regulatory basis:

- *Class I Nuclear Facilities Regulations*, paragraph 4(e).

Physical design

The physical design SCA relates to activities that affect the ability of Structures, Systems and Components (SSCs) to meet and maintain their design basis, given new information arising over time and taking changes in the external environment into account.

Applicable regulatory basis:

- *General Nuclear Safety and Control Regulations*, paragraph 3(1)(d);
- *Class I Nuclear Facilities Regulations*, paragraphs 3(a), (b) and (j); and,
- *Nuclear Security Regulations*, paragraph 3(b).

Radiation protection

The radiation protection SCA 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, controlled and maintained as low as reasonably achievable (ALARA).

Applicable regulatory basis:

- *General Nuclear Safety and Control Regulations*, paragraphs 3(1)(e), 3(1)(f), 29(1)(b), 17(d) and 17(e);
- *Class I Nuclear Facilities Regulations*, paragraph 3(g); and,
- *Radiation Protection Regulations.*

Conventional health and safety

The conventional health and safety SCA covers the implementation of a program to manage workplace safety hazards and to protect personnel and equipment.

Applicable regulatory basis:

- *Class I Nuclear Facilities Regulations*, paragraphs 3(f) and 4(e).

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.

Applicable regulatory basis:

- *General Nuclear Safety and Control Regulations*, paragraphs 12(1)(c) and 12(1)(f);
- *Class I Nuclear Facilities Regulations*, paragraphs 3(a), 3(b), 3(c), 3(e), 3(g), 3(h), 3(j), 4(a), 4(b), 4(c), 4(d), and 4(e); and,
- *Radiation Protection Regulations*, paragraph 4(b) and subsection 13(1)

Emergency management and fire protection

The emergency management and fire protection SCA covers emergency plans and emergency preparedness programs that exist for emergencies and for non-routine

conditions. This area also includes any results of participation in exercises. Note: This SCA includes conventional emergency and fire response. Fire protection operations, design and analysis are discussed in the appropriate SCA of operating performance, safety analysis or physical design.

Applicable regulatory basis:

- *General Nuclear Safety and Control Regulations*, paragraph 3(1)(k); and,
- *Class I Nuclear Facilities Regulations*, paragraphs 3(f) and 3(k).

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 area also covers the planning for decommissioning.

Applicable regulatory basis:

- *General Nuclear Safety and Control Regulations*, paragraphs 3(1)(j), 3(1)(k) and 3(1)(l); and,
- *Class I Nuclear Facilities Regulations*, paragraphs 3(e), 3(k), 4(a), 4(c).

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.

Applicable regulatory basis:

- *General Nuclear Safety and Control Regulations*, paragraphs 3(1)(d), 3(1)(g), and 3(1)(h) and sections 21 through 23;
- *Class I Nuclear Facilities Regulations*, paragraph 3(i); and,
- *Nuclear Security Regulations*, section 3.

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/International Atomic Energy Agency (IAEA) safeguards agreements as well as all other measures arising from the Treaty on the Non-Proliferation of Nuclear Weapons.

Applicable regulatory basis:

Nuclear Non-Proliferation Import and Export Control Regulations.

This section also addresses the requirements of the following international protocols:

- IAEA INFCIRC/164, 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 [53];
- IAEA INFCIRC/164/Add.1, Protocol Additional to INFCIRC/164 [54];
- Preliminary Decommissioning Plan and Financial Guarantees;
- The *General Nuclear Safety and Control Regulations* requires under paragraph 3(1)(l) that a licence application contains a description of any proposed financial guarantee relating to the activity to be licensed; and,
- Paragraph 3(k) of the *Class I Nuclear Facilities Regulations* requires that an application for a licence in respect of a Class I nuclear facility, other than a licence to abandon, shall contain the proposed plan for the decommissioning of the nuclear facility or of the site.

Indigenous Engagement

When the applicant determines that the activity described in their licence application requesting authorization from the Commission could adversely affect potential or established Aboriginal and/or treaty rights, they shall:

- identify and engage with potentially affected Aboriginal groups;
- submit an Aboriginal engagement report;
- submit material change updates to the Aboriginal engagement report;
- include a summary of Aboriginal engagement activities in their licence application and any submissions to the Commission.

Applicable regulatory basis:

- REGDOC-3.2.2, Aboriginal Engagement, Version 1.

Licensee's Public Information Program

- It is a requirement of the Class I Nuclear Facilities Regulations under paragraph 3(j) that an application for a licence in respect of a Class I nuclear facility, other than a licence to abandon, shall contain information on the licensee's public information program; and,
- REGDOC-3.2.1, *Public Information and Disclosure.*

C.2 Technical Basis

The technical basis for the recommendations presented in this Commission Member Document (CMD) includes international guidance documents, national standards and regulatory documents, and is specified in the applicable sections of the proposed Licence Condition Handbook (LCH) found in Part Two of this CMD.

D. SAFETY AND CONTROL AREA FRAMEWORK

D.1 Safety and Control Areas Defined

The safety and control areas identified in Section 2.3 of this Commission Member Document (CMD), and discussed in summary in Sections 4.1 through 4.14 of this CMD are comprised of specific areas of regulatory interest, which vary between facility or activity types.

The following table provides a high-level definition of each Safety and Control Area (SCA):

SAFETY AND CONTROL AREA FRAMEWORK		
Functional Area	**Safety and Control Area**	**Definition**
Management	Management System	Covers the framework that establishes the processes and programs required to ensure an organization achieves its safety objectives, continuously monitors its performance against these objectives, and fosters a healthy safety culture.
	Human Performance Management	Covers activities that enable effective human performance through the development and implementation of processes that ensure 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 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.
	Physical Design	Relates to activities that impact the ability of structures, systems and components to meet and maintain their design basis given new information arising over time and taking changes in the external environment into account.
	Fitness for Service	Covers activities that impact the physical condition of structures, systems and components to ensure that they remain effective over time. This area includes programs that ensure all equipment is available to perform its intended design function when called upon to do so.
Core Control Processes	Radiation Protection	Covers the implementation of a radiation protection 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 ALARA.

SAFETY AND CONTROL AREA FRAMEWORK		
Functional Area	**Safety and Control Area**	**Definition**
	Conventional Health and Safety	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 that exist for emergencies and for non-routine conditions. This area also includes any results of participation in exercises.
	Waste Management	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 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.
	Safeguards and Non-Proliferation	Covers the programs and activities required for the successful implementation of the obligations arising from the Canada/IAEA safeguards agreements, as well as all other measures arising from the *Treaty on the Non-Proliferation of Nuclear Weapons*.
	Packaging and Transport	Programs that cover the safe packaging and transport of nuclear substances to and from the licensed facility.

D.2 Specific Areas for this Facility and/or Activity

The following table identifies the specific areas that comprise each Safety and Control Area (SCA) for this Commission Member Document (CMD):

SPECIFIC AREAS FOR THIS FACILITY AND/OR ACTIVITY		
Functional Area	**Safety and Control Area**	**Specific Areas**
Management	Management System	▪ Management System; ▪ Organization; ▪ Performance Assessment, Improvement and Management Review; ▪ Operating Experience (OPEX); ▪ Change Management. ▪ Safety Culture; ▪ Configuration Management; ▪ Records Management; ▪ Management of Contractors; ▪ Design Governance; ▪ Business Continuity.
	Human Performance Management (n/a – see Management System SCA)	▪ Personnel Training; ▪ Work Organization and Job Design; ▪ Fitness for Duty.
	Operating Performance	▪ Conduct of Licensed Activity; ▪ Procedures; ▪ Reporting and Trending.
Facility and Equipment	Safety Analysis	▪ Hazard Analysis
	Physical Design	▪ Facility Design; ▪ Structure Design; ▪ System Design; ▪ Component Design.
	Fitness for Service (n/a)	
Core Control Processes	Radiation Protection	▪ Application of ALARA; ▪ Worker Dose Control; ▪ Radiation Protection Program Performance; ▪ Radiological Hazard Control; ▪ Estimated Dose to Public.

SPECIFIC AREAS FOR THIS FACILITY AND/OR ACTIVITY		
Functional Area	**Safety and Control Area**	**Specific Areas**
	Conventional Health and Safety	▪ Performance; ▪ Practices; ▪ Awareness.
	Environmental Protection	▪ Effluent and Emissions Control (releases); ▪ Environmental Management System (EMS); ▪ Assessment and Monitoring; ▪ Protection of the Public; ▪ Environmental Risk Assessment.
	Emergency Management and Fire Protection	▪ Conventional Emergency Preparedness and Response; ▪ Nuclear Emergency Preparedness and Response; ▪ Fire Emergency Preparedness and Response.
	Waste Management	▪ Waste Characterization; ▪ Waste Minimization; ▪ Waste Management Practices; ▪ Decommissioning Plans.
	Security	▪ Facilities and Equipment; ▪ Response Arrangements; ▪ Security Practices; ▪ Cyber Security.
	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.
	Packaging and Transport (n/a)	

E. SUPPORTING DETAILS

E.1 JRP Recommendations Closed to Date

The complete list of JRP Recommendations and their status is found in Section E3 of this CMD.

The following table summarizes JRP Recommendations that have been closed.

Table of Closed JRP Recommendations

JRP #	Summary of Closure	Directed to
3	**JRP RECOMMENDATION** The Panel recommends that the CNSC 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-meter depth contour and should include cooling tower plume abatement technology. **GOVERNMENT OF CANADA RESPONSE** The GOC 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. DFO and Environment Canada (EC) can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation. The GOC further acknowledges the connection of this Recommendation with Panel Recommendation #31 and as such notes that DFO 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 meter depth contour of Lake Ontario. **CLOSURE SUMMARY** OPG completed an analysis comparing once-through cooling with mechanical draft cooling towers and has selected once-through cooling for the proposed DNNP. CNSC staff review of the analysis	OPG

	concluded the methodology used by OPG satisfied the JRP recommendation. In addition, CNSC staff consider that there are no fundamental barriers to licensing a once-through cooling water system for the proposed DNNP, subject to the conditions outlined in a letter sent to OPG on March 28, 2013. It is important to note that CNSC staff's review does not bind future decisions made by the Commission should an application for a licence to construct a nuclear power plant be received. The intent of the recommendation was met and the recommendation was closed.	
4	**JRP RECOMMENDATION** The Panel recommends that the CNSC 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. **GOVERNMENT OF CANADA RESPONSE** The GOC 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. **CLOSURE SUMMARY** The GOC response re-directed the recommendation to the provincial and municipal officials. Well established requirements and standards exist at the provincial and municipal jurisdictional levels for OPG to follow applicable laws and regulations. Given jurisdictional laws and regulations are in place CNSC Staff concluded this JRP Recommendation will continue to be met per its intent and the recommendation was closed.	Provincial and municipal officials
43	**JRP RECOMMENDATION** 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. **GOVERNMENT OF CANADA RESPONSE** 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. **CLOSURE SUMMARY** CNSC engaged appropriate stakeholders to discuss the development of policy for land use around	CNSC

	nuclear generating stations. The Province of Ontario Provincial Policy Plan has contained land use compatibility policy since 2014. As proper processes and policies have been implemented to meet the intent of the recommendation going forward the recommendation was closed.	
44	**JRP RECOMMENDATION** The Panel recommends that the Government of Ontario take appropriate measures to prevent sensitive and residential development within three kms of the site boundary. **GOVERNMENT OF CANADA RESPONSE** This recommendation was directed to the Government of Ontario. **CLOSURE SUMMARY** The Province of Ontario Provincial Policy Plan has included a land use compatibility policy since 2014. Proper processes and policies have been implemented to meet the intent of the recommendation going forward. As proper processes and policies have been implemented to meet the intent of the recommendation going forward the recommendation was closed.	Government of Ontario
45	**JRP RECOMMENDATION** 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 kilometer zone around the site boundary. **GOVERNMENT OF CANADA RESPONSE** This recommendation was directed to the Municipality of Clarington. **CLOSURE SUMMARY** The Municipality of Clarington Official Plan includes a policy for land use planning. As proper processes and policies have been implemented to meet the intent of the recommendation going forward the recommendation was closed.	Municipality of Clarington
46	**JRP RECOMMENDATION** Given that a severe accident may have consequences beyond the three and 10 km 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 PNERP, to protect human health and safety.	Government of Ontario

	GOVERNMENT OF CANADA RESPONSE This recommendation was directed to the Government of Ontario. **CLOSURE SUMMARY** The PNERP was revised in 2017. The Government of Ontario has an updated plan with requirements reviewed every 5 years. This includes review of the planning zones and the preparedness and response measures. The next revision is expected in 2022. Processes and policies have been implemented to meet the intent of the recommendation going forward and the recommendation was closed.	
55	**JRP RECOMMENDATION #55** The Panel recommends that Health Canada and the CNSC 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. **GOVERNMENT OF CANADA RESPONSE** The GOC accepts the recommendation to continue its participation in international studies seeking to identify long-term health effects of low-level radiation exposures. The GOC 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 CNSC 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 CNSC, upon request, in support of the review of limits specified in the Radiation Protection Regulations. **CLOSURE SUMMARY** It is on-going federal practice between CNSC health science team and Health Canada to collaborate on initiatives regarding effects of low-level radiation exposures. This is ensured through a Memorandum of Understand (MOU). CNSC commits to reviewing recommendations for revisions to dose limits based on the outcome of international science based organizations and the recommendations of international partners involved in developing the system of radiological protection. CNSC review of these recommendations is to determine the appropriateness of the recommendation and assess the need to revise dose limits. CNSC and Health Canada continue to participate in relevant international work to seeking to identify long-term health effects of low-level radiation exposures and the recommendation was closed.	Health Canada and CNSC

59	**JRP RECOMMENDATION** 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. **GOVERNMENT OF CANADA RESPONSE** This recommendation was directed to the Municipality of Clarington. **CLOSURE SUMMARY** The Municipality of Clarington Official Plan includes a policy for land use planning. Processes and policies have been implemented to meet the intent of the recommendation going forward and the recommendation was closed.	Municipality of Clarington
60	**JRP RECOMMENDATION** The Panel recommends that prior to construction, the GOC 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. **GOC RESPONSE** The GOC accepts the intent of this recommendation, that the GOC 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 GOC 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. **CLOSURE SUMMARY** The *Nuclear Liability and Compensation Act* in force January 2017 addresses this recommendation and the recommendation was closed.	GOC
62	**JRP RECOMMENDATION** 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	CNSC

	quality. **GOC RESPONSE** The GOC 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 GOC acknowledges that the CNSC has the statutory authority and powers to address the findings of this recommendation through future licensing under the NSCA. **CLOSURE SUMMARY** EC evaluated the need for additional air quality monitoring stations in the local study area to monitor cumulative effects on air quality. This was done with OPG and CNSC Staff and Environment Canada provided the attached correspondence to OPG on the matter. EC has performed the evaluation per the JRP Recommendation and the recommendation was closed.	
64	**JRP RECOMMENDATION** The Panel recommends that the Canadian Environment Assessment Agency revise the Canadian Environmental Assessment Agency Cumulative Effects Practitioner's Guide to specifically include consideration of accident and malfunction scenarios. **GOC RESPONSE** The GOC accepts this recommendation. Canadian Environment Assessment Agencyis in the process of updating its suite of instruments in support of cumulative effects assessment under the CEAA [1]. An operational policy statement, scheduled for completion by December 2012, will provide core guidance to practitioners and include the consideration of accidents and malfunctions. **CLOSURE SUMMARY** The Cumulative Effects Assessment Practitioners' Guide is currently provided by the Impact Assessment Agency of Canada (IAAC) to provide guidance on federal environmental assessments commenced under the former CEAA [1]. It is retained for the completion of transitional environmental assessments commenced prior to the CEAA [1]. As the EA for the DNNP is complete, this recommendation has been closed.	Canadian Environmental Assessment Agency now IAAC
65	**JRP RECOMMENDATION**	GOC

	The Panel recommends that the GOC make it a priority to invest in developing solutions for long-term management of used nuclear fuel, including storage, disposal, reprocessing and re-use. **GOC RESPONSE** The GOC 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 (NWMO), established by the nuclear energy corporations, is responsible for implementing the government-selected plan for managing nuclear fuel waste over the long-term. The GOC 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. **CLOSURE SUMMARY** The GOC has accepted the intent of this recommendation to make the investment in solutions for the long-term management of used nuclear fuel a priority. As the GOC response indicated, the NWMO has been established and is responsible for implementing the government selected plan for managing nuclear fuel waste over the long-term. Further, the GOC also stated in its response that it is committed to ensuring proper funding for this body of work. The intent of the recommendations was to ensure something was put in place and for the GOC to commit its intent to fund and prioritize solutions for the storage of nuclear fuel waste long-term. This is accomplished through the GOC response and the recommendation was closed.	
66	**JRP RECOMMENDATION** The Panel recommends that the GOC 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. **GOC RESPONSE** The GOC accepts the intent of this recommendation, that the GOC update the Nuclear Liability and Compensation Act or its equivalent to reflect the consequences of a nuclear accident. The GOC 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.	GOC

	CLOSURE SUMMARY The Nuclear Liability and Compensation Act in force January 2017 addresses this recommendation and the recommendation was closed.	
67	**JRP RECOMMENDATION** The Panel recommends that the GOC provide clear and practical direction to the application of sustainability assessment in environmental assessments for future nuclear projects. **GOC RESPONSE** The GOC 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 CEAA [1], should a separate sustainability assessment be required by Responsible Authorities for future nuclear projects, the GOC 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. **CLOSURE SUMMARY** The GOC response provides sufficient flexibility for the responsible authorities to consider sustainability based on the nature of EA framework for future nuclear projects. The *Impact Assessment Act* (IAA) [22], outlines how sustainability may be considered for impact assessments in Section 6(1)(a), Section 6(2), Section 22(1)(1) and Section 63(a). Based on the current federal legislation, this recommendation has been met per the GOC response for future nuclear projects and the recommendation was closed.	Canadian Environmental Assessment Agency now IAAC

E.2 Status of JRP Recommendations

JRP Recommendations directed to OPG are documented and managed through the OPG DNNP Commitment Report [10]. The corresponding OPG DNNP Commitment Report [10] reference numbers are included in the table below. Where a JRP Recommendation is not directed to OPG, the OPG DNNP Commitment Report column indicates this number is not applicable.

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 organization. The GOC either accepted the recommendation as is or accepted the intent of the recommendation with clarifications in their response. In a few 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 Response	OPG Commitment Ref#	Status
1	The Panel understands that prior to construction, the CNSC will determine whether this EA 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 GOC accepts the intent of this recommendation, but acknowledges that any RA under the CEAA [1] 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 [1].	N/A	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
2	The Panel recommends that prior to site preparation, the CNSC require OPG to conduct a comprehensive soil 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 GOC accepts the recommendation to require OPG to conduct a comprehensive soil characterization program. The GOC 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 CNSC, upon request, to assist in the implementation of this recommendation.	D-P-3.6	Initiated
3	The Panel recommends that the CNSC 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-meter depth contour and should include cooling tower plume abatement technology.	The GOC 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. DFO and EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation. The GOC further acknowledges the connection of this Recommendation with Panel Recommendation #31 and as such notes that DFO will work with OPG to ensure through its regulatory process and conditions of authorization under the Fisheries Act that any HADD is limited to the 2 m depth contour of Lake Ontario.	D-C-1.1	Complete

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
4	The Panel recommends that the CNSC 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 GOC 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	Complete
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 GOC accepts this recommendation to avoid any unnecessary environmental damage to the bluff at Raby Head and fish habitat as recommended. DFO and EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation. The GOC further notes that authorization under the Fisheries Act will be required prior to any lake infill taking place, and confirms that DFO 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-3.8 D-P-14.1 D-P-16.1	Initiated
6	The Panel recommends that prior to site preparation, the CNSC require OPG to update its preliminary decommissioning plan for site preparation in accordance with the requirements of CSA Standard N294-09. The OPG preliminary decommissioning plan for site	The GOC 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 N294-09, which provides direction on the decommissioning of licensed facilities and activities consistent with	D-P-13.1	Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
	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 CNSC.	Canadian and international recommendations. The GOC accepts the recommendation to require OPG to revise the preliminarydecommissioning plan once a reactor technology is selected.		
7	The Panel recommends that prior to site preparation, the CNSC require that OPG establish a decommissioning financial guarantee to be reviewed as required by the CNSC. 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 GOC 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	Initiated
8	The Panel recommends that prior to site preparation, the CNSC 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 CNSC, Health Canada and Environment Canada. Additionally, the CNSC must require OPG to develop an action plan acceptable to Health Canada for days when there are air quality or smog alerts.	The GOC 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 CNSC, to assist in the implementation of this recommendation.	D-P-3.10 D-P-12.2	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
9	The Panel recommends that the CNSC, 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 GOC 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	Not Initiated
10	The Panel recommends that the CNSC 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 • confirming the conclusions reached concerning	The GOC 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	Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
	the liquefaction potential in underlying granular materials.			
11	The Panel recommends that the CNSC require OPG to develop and implement a follow-up program for soil quality during all stages of the Project.	The GOC accepts this recommendation to require OPG to develop and implement a follow-up program for soil quality. EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.	D-P-12.6	Not Initiated
12	The Panel recommends that before in-water works are initiated, the CNSC 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 GOC 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 CNSC, upon request, to assist in the implementation of this recommendation.The GOC 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	Initiated
13	The Panel recommends that the CNSC 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	The GOC 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	D-P-12.3	Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
	commencing in-water works. This data should be used to establish a reference for follow-up monitoring.	commencing in-water works, and would further support the collection of sediment quality data as part of a comprehensive program. EC and DFO can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation. The GOC notes that authorization under the Fisheries Act will be required prior to in-water works. Prior to the issuance of an authorization, DFO 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.		
14	The Panel recommends that following the selection of a reactor technology for the Project, the CNSC 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 CNSC shall also require OPG to conduct a risk assessment on the proposed residual releases to determine whether additional mitigation measures may be necessary.	The GOC accepts this recommendation to require OPG to conduct a detailed assessment of predicted effluent releases from the Project, as recommended. EC and DFO can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.	D-P-12.9 D-C-2.1 D-C-4.1	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
15	The Panel recommends that following the start of operation of the reactors, the CNSC 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 GOC accepts this recommendation to require OPG to conduct monitoring of ambient water and sediment quality in the receiving waters as recommended. EC and DFO can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation. The GOC 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	Not Initiated
16	The Panel recommends that prior to the start of construction, the CNSC 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 GOC 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 GOC would additionally support the application of this recommended testing for process effluents. EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.	D-P-3.4 D-C-2.1	Not Initiated
17	The Panel recommends that the CNSC 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.	The GOC accepts this recommendation to requireOPG 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 GOC would support	D-P-12.6 D-C-2.1 D-C-4.1 D-C-5.1 D-C-5.2	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
	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.	enhanced groundwater and contaminant transport modeling extending to appropriate model boundaries, which may notnecessarily be site boundaries. Natural Resources Canada (NRCan) and EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.	D-C-6.1	
18	The Panel recommends that based on the groundwater and contaminant transport modeling results, the CNSC 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 GOC accepts this recommendation to require OPG to update the Radiological Environmental Monitoring Program, based on the groundwater and contaminant transport modeling results. NRCan and EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.	D-C-6.1	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
19	The Panel recommends that the CNSC 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 GOC 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. NRCan can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.	D-P-12.6	Not Initiated
20	The Panel recommends that the CNSC 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 GOC accepts this recommendation to require OPG to perform a thorough evaluation of site layout opportunities before site preparation activities begin, as recommended. EC and DFO can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation. As part of the conditions of authorization under the Fisheries Act, DFO also commits to working with OPG to ensure overall impacts to aquatic habitat are minimized with appropriate mitigation and habitat compensation.	D-P-3.7 D-P-14.1	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
21	The Panel recommends that the CNSC require OPG to compensate for the loss of ponds, like-for-like, preferably in the site study area. The Panel also recommends that the CNSC 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 GOC accepts the recommendation to require OPG to use best management practices to prevent or minimize the potential runoff of sediment and other contaminants. The GOC accepts the intent of compensating for the loss of ponds, but would also support the CNSC requiring OPG to design compensation ponds that maximize ecological function, and not necessarily limited to "like for-like". EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.	D-P-3.7	Not Initiated
22	The Panel recommends that the CNSC 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 GOC 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. EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.	D-P-12.5	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
23	The Panel recommends that EC 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 GOC 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 GOC acknowledges that the CNSC 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. EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.	D-P-12.5	Not Initiated
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 GOC 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, EC 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 GOC acknowledges that the CNSC has the statutory authority and powers to address this recommendation through future licensing under the Nuclear Safety and Control Act. EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.	D-P-3.7	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
25	The Panel recommends that the CNSC require OPG to conduct more sampling to confirm the presence of Least Bittern before site preparation activities begin. The Panel recommends that the CNSC 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 GOC 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. EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.	D-P-3.7 D-P-12.5	Initiated
26	The Panel recommends that the CNSC 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 GOC 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. EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.	D-P-3.6 D-P-12.9 D-C-2.1 D-C-5.2	Not Initiated
27	The Panel recommends that prior to any destruction of the Bank Swallow habitat, the CNSC 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 thecapacity to maintain a population which is at least equal to thenumber of breeding pairs currently supported by the bluff and asclose to the	The GOC accepts the intent of this recommendation to require OPG to implement the identified BankSwallow mitigation measures using an adaptive management approach, and would support determining required mitigation based on reasonable estimates of actual burrow loss. The GOC expects that the acquisition of offsite nesting habitat shouldonly 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	D-P-3.8	Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
	original bluff site as possible • the implementation of an adaptive management approach in theBank Swallow mitigation plan, with the inclusion of a threshold of loss to be established in consultation with all stakeholdersbefore any habitat destruction takes place	the Site Study Area. EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.		
28	The Panel recommends that DFO 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 GOC accepts this recommendation. DFO will work with EC, the CNSC, 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-12.4 D-P-15.1	Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
29	The Panel recommends that DFO 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 GOC accepts this recommendation. DFO will work with EC, the CNSC, the 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	Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	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, DFO 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. • 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 GOC accepts this recommendation. DFO will work with the CNSC, and the Ontario Ministry of Natural Resources to develop an impingement and entrainment sampling program. The GOC would also like to note that authorization under the Fisheries Act will be required prior to any lake infill taking place and commits that DFO 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	Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
31	Irrespective of the condenser cooling system chosen for the Project, the Panel recommends that DFO not permit OPG to infill beyond the two-meter depth contour in Lake Ontario.	The GOC accepts the intent of this recommendation. DFO 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-meter 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-P-14.1 D-P-16.1 D-C-1.1	Initiated
32	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that DFO 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 GOC accepts this recommendation. DFO will work with EC and the CNSC 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. DFO will work with OPG to ensure implementation through its regulatory process and conditions of authorization under the Fisheries Act.	D-C-1.2	Initiated
33	The Panel recommends that DFO 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	The GOC accepts this recommendation. DFO will work with the CNSC and OPG 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	Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
	statistical probability analysis will be needed to determine if unbiased and precise sample results can be produced.			
34	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to construction, EC ensure that enhanced resolution thermal plume modeling is conducted by OPG, taking into account possible future climate change effects. DFO 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 and the diffuser of the proposed condenser cooling water system.	The GOC accepts the intent of this recommendation. EC is committed to reviewing the information provided by OPG, and will rely on DFO authorization for a HADD associated with the intake or outfall to ensure that OPG undertakes this modelling. DFO will work with EC, and the CNSC to incorporate the results from the thermal plume modeling into the determination of the appropriate location for the intake and diffuser structures to mitigate adverse effects. DFO will ensure implementation through conditions of a Fisheries Act authorization.	D-C-1.2	Not Initiated
35	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to operation, the CNSC 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	The GOC 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. EC and DFO can provide available scientific and technical expertise to the CNSC, upon request, to assist in the design of the surface water risk assessment and any subsequent action plan development.	D-P-12.3 D-P-12.4 D-C-1.2	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
	assessment result predicts a potential hazard then the CNSC shall convene a follow-up monitoring scoping workshop with EC, DFO and any other relevant authorities to develop an action plan.			
36	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that during operation, the CNSC 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 GOC accepts this recommendation to require OPG to undertake adult fish monitoring to confirm the effectiveness of mitigation measures and effect predictions. EC and DFO can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation. DFO 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.	D-P-12.4 D-C-1.2	Not Initiated
37	In the event that a once-through condenser cooling system is chosen for the Project, the Panel recommends that prior to construction, the CNSC 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 GOC accepts the intent of this recommendation to require OPG to determine the total area of permanent aquatic effects from identified impacts. The GOC would further support inclusion of cumulative effects assessment in this assessment, including the effects of impingement and entrainment and climate change. EC and DFO can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation	D-P-12.4 D-C-1.2	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
	• the mixing zone and surface plume contaminants • physical displacements from altered lake currents and • infill and construction losses and modifications.	of this recommendation. Further, DFO is committed to working with the CNSC 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.		
38	The Panel recommends that the CNSC 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 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.	The GOC 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. NRCan can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.	D-P-9.1 D-P-9.4 D-O-4.1	Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
	• 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. Mary's 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. Mary's Cement blasting operations to confirm that the maximum peak ground			

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
	velocity at the boundary between the Darlington and St. Mary's Cement properties is below the proposed limit of three millimeters per second (mm/s).			
39	The Panel recommends that prior to construction, the CNSC 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 CNSC. 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 CNSC as part of a licence to construct a reactor.	The GOC 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 GOC 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. EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.	D-C-7.1	Not Initiated
40	The Panel recommends that prior to construction, the CNSC require OPG to: • establish an adaptive management program for algal hazard to the Project cooling water	The GOC 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 intoplanned siting studies	D-P-12.4 D-C-1.2	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
	system intake that includes the setup of thresholds for further actions • 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.	and cost-benefit analyses. DFO and EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.		
41	The Panel recommends that prior to site preparation, the CNSC 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 GOC 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.	N/A D-P-17.1	Not Initiated
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 GOC 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	Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
43	The Panel recommends that the CNSC 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 GOC accepts this recommendation for the CNSC to engage appropriate stakeholders in developing policy for land use around nuclear generating stations.	N/A	Complete
44	The Panel recommends that the Government of Ontario take appropriate measures to prevent sensitive and residential development within three kilometers of the site boundary.	This recommendation was directed to the Government of Ontario.	N/A	Complete
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 kilometer zone around the site boundary.	This recommendation was directed to the Municipality of Clarington.	N/A	Complete
46	Given that a severe accident may have consequences beyond the three and 10 km 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 PNERP, to protect human health and safety.	This recommendation was directed to the Government of Ontario.	N/A	Complete

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
47	The Panel recommends that prior to site preparation, the CNSC 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 • 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 GOC 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	Initiated
48	In consideration of public safety, the Panel recommends that prior to site preparation, the CNSC coordinate a committee of federal, provincial and municipal transport authorities to review the need for road development and modifications.	The GOC 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
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 GOC 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	D-C-3.1	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
	the Project.	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.		
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) • a critical analysis to confirm that these	The GOC 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	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
	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 GOC 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	Not Initiated
52	The Panel recommends that prior to construction, the CNSC 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 GOC 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-O-2.1	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
53	The Panel recommends that prior to construction, the CNSC 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 GOC 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	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
54	The Panel recommends that during operation, the CNSC 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 GOC 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 GOC further notes that the CNSC regulates 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 CNSC's Radiation Protection Regulations require that releases are kept "As Low As Reasonably Achievable" (ALARA), social and economic factors taken into account.	D-C-4.1	Not Initiated
55	The Panel recommends that Health Canada and the CNSC continue to participate in international studies seeking to identify long-term health effects of low-level radiation	The GOC accepts the recommendation to continue its participation in international studies seeking to identify long-term health effects of low-level radiation exposures.	N/A	Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
	exposures, and to identify if there is a need for revision of limits specified in the Radiation Protection Regulations.	The GOC 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 CNSC 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 CNSC, upon request, in support of the review of limits specified in the Radiation Protection Regulations.		
56	The Panel recommends that over the life of the Project, the CNSC 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 GOC 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. EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.	D-P-12.2	Not Initiated
57	The Panel recommends that prior to construction, the CNSC 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	The GOC accepts this recommendation to require OPG to undertake an assessment of the off-site effects of a severe accident. EC can provide available scientific and technical expertise to the CNSC, upon request, to assist in the implementation of this recommendation.	D-P-12.9 D-C-3.1	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
	technology.			
58	The Panel recommends that prior to construction, the CNSC 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 GOC accepts this recommendation to ask the CNSC to confirm that dose acceptance criteria specified in RD-337 will be met.	D-C-3.1	Not Initiated
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	Complete
60	The Panel recommends that prior to construction, the GOC 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 GOC accepts the intent of this recommendation, that the GOC 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 GOC 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	Complete

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
61	The Panel recommends that during operation, the CNSC 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 GOC accepts this recommendation to require OPG to monitor aquatic habitat and biota for potential cumulative effects from the thermal loading and contaminant plume. EC and DFO can provide available scientific and technical expertise to the CNSC, 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	Initiated
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 GOC 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 GOC acknowledges that the CNSC 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	Complete
63	The Panel recommends that prior to construction, the CNSC 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 GOC 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 GOC 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.	D-C-3.1	Not Initiated

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
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 GOC 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 [1]. 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	Complete
65	The Panel recommends that the GOC 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 GOC 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 NWMO, established by the nuclear energy corporations, is responsible for implementing the government-selected plan for managing nuclear fuel waste over the long-term. The GOC 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	Complete
66	The Panel recommends that the GOC 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	The GOC accepts the intent of this recommendation, that the GOC update the Nuclear Liability and Compensation Act or its equivalent to reflect the consequences of a nuclear accident. The GOC 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	N/A	Complete

#	JRP Recommendation	Government Response	OPG Commitment Ref#	Status
	equivalent, must be in force before the Project can proceed to the construction phase.	introduction of the Nuclear Liability and Compensation Act bill in Parliament.		
67	The Panel recommends that the GOC provide clear and practical direction to the application of sustainability assessment in environmental assessments for future nuclear projects.	The GOC 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 CEAA [1], should a separate sustainability assessment be required by Responsible Authorities for future nuclear projects, the GOC 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	Complete

PART TWO

Part Two provides all relevant information pertaining directly to the licence, including:

1. Any proposed changes to the conditions, licensing period, or formatting of the current licence;
2. Proposed licence;
3. Draft licence conditions handbook; and,
4. Current licence.

PROPOSED LICENCE CHANGES

Overview

OPG currently possesses Power Reactor Site Preparation Licence, PRSL 18.00/2022. The licence was issued in August 2012 for period of 10 years. In June 2020, OPG submitted an application for renewal of the PRSL.

Licence Format and Conditions

The existing licence produced in 2012 was written in a different format than the current CNSC standard licences. The proposed licence uses the standard format and incorporates the standardized licence conditions applicable to DNNP.

The table below provides a comparision of the current licence to the proposed lice and the rationale for the change.

CURRENT LICENCE	PROPOSED LICENCE	Rationale for Change
IV) LICENSED ACTIVITIES: This licence authorizes the licensee to: (i) 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 (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);	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	No change except for an update to the survey drawing

CURRENT LICENCE	PROPOSED LICENCE	Rationale for Change
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).	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 NEW NUCLEAR AT DARLINGTON GENERATING STATION - SITE PREPARATION LICENCE CONDITIONS HANDBOOK (LCH)" provides compliance verification criteria in order to meet the conditions	**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 NEW NUCLEAR AT DARLINGTON GENERATING STATION - SITE PREPARATION LICENCE CONDITIONS HANDBOOK (LCH)" provides compliance verification criteria	Updated to align with CNSC standardized licence conditions.

CURRENT LICENCE	PROPOSED LICENCE	Rationale for Change
listed in this licence. The LCH also provides information regarding delegation of authority and applicable versions of documents.	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.	
1.2 The licensee shall conduct the activities described in Part IV of this licence in accordance with the licensing basis. 1.6 The licensee shall, in the event of any conflict or inconsistency between licence conditions, codes, standards or regulatory documents referenced in this licence, direct the conflict or inconsistency to the Commission, or a person authorized by the Commission, for resolution.	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 (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").	Updated to align with CNSC standardized licence conditions.

1.3	The licensee shall give written notification to the Commission, or person authorized by the Commission, of any changes made to the documents needed to support the licence application.	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.	Updated to align with CNSC standardized licence conditions.
		G.3	The licensee shall control the use and occupation of any land within the exclusion zone.	Added to align with REGDOC 1.1.1.
1.5	The licensee shall provide, at no expense to the Commission, office space for employees of the Commission who customarily carry out their functions on the site premises (on-site Commission staff). The licensee shall keep the office space of on-site Commission staff separate from the remainder of the building in which it is located by walls, partitions or other suitable structures	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).	Updated to align with CNSC standardized licence conditions.
10.4	The licensee shall maintain a financial guarantee that is acceptable to the Commission which shall remain valid and in effect to adequately fund the preliminary decommissioning plan referenced in condition 8.2 of this licence.	G.5	The licensee shall maintain a financial guarantee for decommissioning that is acceptable to the Commission.	Updated to align with CNSC standardized licence conditions.
10.5	The licensee shall implement and maintain a public information program in accordance with the requirements of CNSC regulatory document RD/GD-99.3: PUBLIC INFORMATION AND DISCLOSURE.	G.6	The licensee shall implement and maintain a public information and disclosure program.	Updated to align with CNSC standardized licence conditions.
2.1	The licensee shall implement and maintain a	1.1	The licensee shall implement and maintain a	Updated to align with CNSC standardized

	management system in accordance with the requirements of Canadian Standards Association (CSA) standard N286: MANAGEMENT SYSTEM REQUIREMENTS FOR NUCLEAR POWER PLANTS.		management system.	licence conditions. LC 10.6 is not required as this is addressed under LC 1.1 and under LC G.2
10.6	The licensee shall submit to the Commission, or person authorized by the Commission, the proposed quality assurance program for the design of the nuclear facility upon the selection of a reactor technology.			
3.1	The licensee shall implement and maintain safety and control measures to ensure that personnel are qualified and competent to perform assigned work.			Removed to align with REGDOC 1.1.1. The necessary elements of Human performance such as training and safety culture would be managed under LC 1.1 (Management System) and 8.1 (Conventional Health and Safety).
4.1	The licensee shall implement and maintain safety and control measures for the conduct of site preparation activities.	3.1	The licensee shall implement and maintain an operations program.	Updated to align with CNSC standardized licence conditions.
4.2	The licensee shall implement safety and control measures for reporting to the Commission, or person authorized by the Commission, that includes reporting of all events required by the *Nuclear Safety and Control Act* and associated Regulations.	3.2	The licensee shall implement a program for reporting to the Commission, or person authorized by the Commission.	Updated to align with CNSC standardized licence conditions.

4.3	The licensee shall submit to the Commission, or person authorized by the Commission, an annual report on the licensed activities.			Removed to align with CNSC standardized licence conditions. Annual reporting is addressed under licence condition 3.2
		4.1	The licensee shall implement and maintain a safety analysis program.	Added to align with REGDOC 1.1.1
		5.1	The licensee shall implement and maintain a design program.	Added to align with REGDOC 1.1.1
		7.1	The licensee shall implement and maintain a radiation protection program.	Added to align with REGDOC 1.1.1
5.1	The licensee shall implement and maintain safety and control measures for occupational health and safety.	8.1	The licensee shall implement and maintain a conventional health and safety program.	Updated to align with CSNC standardized licence conditions.
6.1	The licensee shall implement and maintain safety and control measures for environmental protection in accordance with the requirements of CNSC regulatory standard S-296: ENVIRONMENTAL PROTECTION, POLICIES, PROGRAMS AND PROCEDURES AT CLASS I NUCLEAR FACILITIES AND URANIUM MINES AND MILLS.	9.1	The licensee shall implement and maintain an environmental protection program.	Updated to align with CNSC standardized licence conditions.
7.1	The licensee shall implement and maintain safety and control measures for emergency preparedness and fire protection.	10.1	The licensee shall implement and maintain an emergency preparedness program.	Updated to align with CNSC standardized licence conditions.

8.1	The licensee shall implement and maintain safety and control measures for waste management.	11.1	The licensee shall implement and maintain a waste management program.	Updated to align with CNSC standardized licence conditions.
8.2	The licensee shall maintain a preliminary decommissioning plan for site preparation in accordance with the requirements of Canadian Standards Association (CSA) standard N294: DECOMMISSIONING OF FACILITIES CONTAINING NUCLEAR SUBSTANCES. The preliminary decommissioning plan shall be revised every five years or when required by the Commission, or person authorized by the Commission.	11.2	The licensee shall implement and maintain a decommissioning plan.	Updated to align with CNSC standardized licence conditions.
9.1	The licensee shall implement and maintain safety and control measures for site security.	12.1	The licensee shall implement and maintain a security program	Updated to align with CNSC standardized licence conditions.
		13.1	The licensee shall implement and maintain a safeguards program.	Added to align with REGDOC 1.1.1
10.1 10.2	The licensee shall implement the mitigation measures proposed and commitments made during the Darlington Joint Review Panel process. The licensee shall implement the applicable recommendations of the Darlington Joint Review Panel Report in accordance with the Government of Canada response.	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.	The original licence conditions have been combined to reduce duplicaiton.
10.3	The licensee shall implement and maintain an environmental assessment follow-up program.	15.2	The licensee shall implement and maintain an environmental assessment follow-up program.	No change

1.1	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.		This LC was removed as it is redundant and covered in LC 15.1 and 15.2 which require OPG to submit updated documents for CNSC staff review and accept in accordance with the JRP review process and the licensing basis.

Licence Period

OPG has requested a 10-year licence renewal term. CNSC has a standardized licence and LCH framework that provides for effective regulatory oversight of operating facilities. The CNSC requires OPG to report on DNNP compliance performance through annual compliance reports, including significant changes to its programs. CNSC staff verify compliance through desktop reviews, inspections and event reviews.

Based on CNSC staff assessment of OPG's application and ongoing verification activities, CNSC staff recommend that the Commission accept OPG's request for a 10-year licence renewal for the DNNP.

Over the proposed 10-year period, CNSC staff would update the status of the DNNP annually to the Commission in public meetings through the *Regulatory Oversight Report for Canadian Nuclear Generating Sites.* If OPG deviates from its commitments, CNSC staff would take regulatory action and report this to the Commission through the Status Report on Power Reactors, provided at each Commission meeting, or as a stand-alone memorandum to the Commission, as appropriate. CNSC staff would also notify other federal or provincial regulators as appropriate.

PROPOSED LICENCE

e-Doc 6416340 (Word)

e-Doc 6504521 (PDF)

Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

PDF Ref.: e-Doc 6504521
Word Ref.: e-Doc 6416340
File: 2.01

DRAFT

NUCLEAR POWER REACTOR SITE PREPARATION LICENCE

OPG NEW NUCLEAR AT DARLINGTON GENERATING STATION

I) LICENCE NUMBER: **PRSL 18.00/2031** **(Effective Date: mm dd, 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 mm dd, 2021 to mm dd, 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 and 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.

SIGNED at OTTAWA MM DD, 2021

_____

Name
Title
Canadian Nuclear Safety Commission

DRAFT LICENCE CONDITIONS HANDBOOK

e-Doc 6495287 (Word)

e-Doc 6479594 (PDF)

Canada's Nuclear Regulator

Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

File #: 2.01/011216
e-Doc 6495287 (Word)
e- Doc 6479594 (PDF)

LICENCE CONDITIONS HANDBOOK

LCH-PRSL-DNNP-R000

ASSOCIATED WITH

ONTARIO POWER GENERATION (OPG)
DARLINGTON NEW NUCLEAR PROJECT (DNNP)
POWER REACTOR SITE LICENCE (PRSL)

LICENCE #PRSL 18.00/2031

(Effective: August xx, 2021)

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Licence Conditions Handbook **Effective: August xx, 2021**

LCH-PRSL-DNNP-R000

Associated with:
Ontario Power Generation
Darlington New Nuclear Project
PRSL 18.00/2031

SIGNED at OTTAWA this xx day of August, 2021.

Caroline Ducros
Director General
Directorate of Regulatory Improvement and Major Projects Management
CANADIAN NUCLEAR SAFETY COMMISSION

Revision History

Effective Date	Applicable to Licence #	Rev. #	LCH e-Doc #	Section(s) changed	Description of the Changes	DCR E-DOCS #
N/A	PRSL 18.00/2031	000-DRAFT	6464102	Original DRAFT Proposal	DRAFT document prepared for public hearing.	N/A

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 planned by Ontario Power Generation (OPG) 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 operation 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 CNSC, and is available upon request.

This LCH includes appendices A to C which contain administrative information and lists of LCH-related documents.

Appendix D 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 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.

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 Environment Protection Act;*
- *Nuclear Liability and Compensation Act;*
- *Transportation of Dangerous Goods Act;*
- *Radiation Emitting Devices Act;*
- *Access to Information Act; and*
- *Canada/IAEA Safeguards Agreement.*

Part (ii) of the licensing basis consists of the safety and control measures described in the 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.

Part (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 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;
- 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.

Where the licensing basis refers to specific configurations, methods, solutions, designs etc., and 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 operation 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 operation) 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.

In case of a conflict between Canadian Standards Association (CSA) standards, CNSC will consult with the CSA before reaching a conclusion on the resolution.

Resolutions made pursuant to this LC are recorded in Appendix E 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

Darlington New Nuclear Project – LCH Control and Administration (e-Doc 6416335) lists the key OPG documents which are deemed to contain the safety and control measures that are considered to form part of item (iii) of the licensing basis.

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 operate nuclear facilities 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. Appendix A.4 describes some of the general criteria that CNSC staff will use to assess changes to documents subject to the WN requirement. 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 #	e-Doc	Prior Notification
Information Management	OPG-PROG-0001	6416335	No

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 (as listed in Darlington New Nuclear Project – LCH Control and Administration (e-Doc 6416335)), 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 (e.g., minimum shift complement, action levels, derived releases limits and environmental action levels) 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, using the criteria in Appendix A.4 and any other applicable criteria.

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 C.

Appendix C 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.

CNSC staff will review the noted changes to the documents in accordance with the guidance provided in Appendix A.

Recommendations and Guidance:

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 #	e-Doc	Prior Notification
OPG New Nuclear at Darlington Survey Drawing	NK054-DRAW-01210-00007	6416335	Yes
Exclusion Zone Determination for Darlington New Nuclear Project	NK054-REP-01210-00003	6416335	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 licence agreement with the Municipality of Clarington, which ensures safe public access to the waterfront trail that traverses the Darlington site.

The licensee shall notify the CNSC of any sensitive land uses proposed within 3 km of the DNNP site.

These documents shall be revised to reflect any transfer of land within the exclusion zone to non-licensee ownership.

Recommendations and Guidance:

None

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 (on-site Commission staff).

Preamble:

CNSC staff require suitable office space and equipment at the nuclear facility 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 decommissioning and all such costs are included in the decommissioning cost estimates and are covered by licensee's consolidated financial guarantee for decommissioning.

The OPG consolidated financial guarantee includes:

- Access to the Ontario Nuclear Funds Agreement (ONFA) segregated funds pursuant to the CNSC Financial Security and ONFA Access Agreement between OPG, the Province of Ontario, and the CNSC effective January 1, 2018 to December 31, 2022;
- A trust fund for the management of used fuel established pursuant to the *Nuclear Fuel Waste Act*; and,
- CNSC Financial Security and ONFA Access Agreement between OPG, the Province of Ontario and the CNSC effective January 1, 2018.

If the project is cancelled under the initial PRSL, decommissioning of the site would not be required and OPG would use the site in support of the existing licensed facilities. 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 if OPG decides to apply for a licence amendment to allow for more substantive site preparation work to be completed that would accrue a decommissioning liability.

Compliance Verification Criteria:

Licensee documents that require notification of change

Document Title	Document #	e-Doc	Prior Notification
Revised Financial Guarantee in the Event that the OPG New Nuclear at Darlington Project is Cancelled	NK054-CORR-00531-00151	6416335	Yes

GENERAL

The current value of the financial guarantee represents $0.00 dollars given that the initial PRSL does not include work that would require decommissioning of the site should the project be cancelled.

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. The next full update to the 5 year reference plan for financial guarantee purposes is expected in 2022.

The licensee shall submit annually to the Commission a written report confirming that the financial guarantees for decommissioning costs remain valid and in effect and sufficient to meet the decommissioning needs. The licensee shall submit this report by the end of February of each year, or at any time as the Commission may request.

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.

Recommendations and Guidance:

CNSC guidance document G-206 *Financial Guarantees for the Decommissioning of Licensed Activities*, provides guidance when reviewing the financial guarantees for decommissioning. REGDOC-3.3.1, *Financial Guarantees for Decommissioning of Nuclear Facilities and Termination of Licensed Activities* was published in January 2021. OPG will provide an implementation plan upon request.

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	

Licensee documents that require notification of change

Document Title	Document #	e-Doc	Prior Notification
Nuclear Public Information Disclosure	N-STD-AS-0013	6416335	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 door to door 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	
N286	Management system requirements for nuclear facilities	2012	

REGDOC-2.1.2	Safety Culture	2018	
REGDOC-2.2.2	Personnel Training	2016	
REGDOC-2.5.2	Design of Reactor Facilities: Nuclear Power Plants (for design management only; Sections 5.1 to 5.3 only)	2014	
N286.10	Configuration management for high energy reactor facilities	2016	

Licensee documents that require notification of change

Document Title	Document #	e-Doc	Prior Notification
Nuclear Safety Policy	N-POL-0001	6416335	No
Nuclear Management System	N-CHAR-AS-0002	6416335	Yes
Nuclear Management System Administration	N-PROG-AS-0001	6416335	No
Nuclear Management Systems Organization	N-STD-AS-0020	6416335	No
Information Management	OPG-PROG-0001	6416335	No
Human Performance	N-PROG-AS-0002	6416335	No
Performance Improvement	N-PROG-RA-0003	6416335	No
Independent Assessment	N-PROG-RA-0010	6416335	No
Training	N-PROG-TR-0005	6416335	No
Items and Services Management	OPG-PROG-0009	6416335	No
Health and Safety Management System Program	OPG-PROG-0010	6416335	No
Project Management	OPG-PROG-0039	6416335	No

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*.

MANAGEMENT SYSTEM

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 entity 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.

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 responsibility as licensee under the *Nuclear Safety and Control Act* and associated Regulations. 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.

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-0010, *Health and Safety Management System Program*, which defines the overall process for managing safety and the responsibilities of the parties, specifically at the corporate level.

Design Management

Once a reactor technology has been selected to be constructed at the DNNP site, 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. 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 of 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 (deliverable D-P-4) prior to the commencement of site preparation activities, to ensure that the management system and training requirements are met.

OPG shall monitor and control the fitness for duty of its workers at all times by implementing and maintaining their "Supervisory Awareness Program" which covers aspect related to fitness for duty.

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 the management system to govern site preparation activities. In addition, as described in deliverable D-P-4 EPC Quality Management Plan, the EPC will develop a management system compliant with the commitment report. OPG will review and accept the EPC's Quality Management Plan prior to the commencement of the licensed activities.

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.

MANAGEMENT SYSTEM

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, basic aspects of human performance management are addressed under the Management System.

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:

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 (from the point at which the equipment connects to equipment that serves the general purpose);
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.

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	

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, and witnessing and surveillance of the EPC's work to ensure that site preparation requirements are met.

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 verify the EPC has a clear understanding and knowledge of the requirements and has interpreted them correctly.

As part of the activities listed above, adequate lake infill design measures will be undertaken such that lake infill is limited to the 2 meter depth contour of Lake Ontario.

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:

The *General Nuclear Safety and Control Regulations* establishes reporting requirements including the filing of preliminary and detailed reports for adverse situations or events.

Compliance Verification Criteria:

Licensee documents that require notification of change

Document Title	Document #	e-Doc	Prior Notification
Conduct of Regulatory Affairs	N-PROG-RA-0002	6416335	No
Performance Improvement	N-PROG-RA-0003	6416335	No
Written Reporting to Regulatory Agencies	N-PROC-RA-0005	6416335	No
Preliminary Event Notifications	N-PROC-RA-0020	6416335	No

Event Reporting

OPG's safety and control measures for reporting shall be in compliance with Paragraphs 29(1) and 29(2) of the *General Nuclear Safety and Control Regulations*.

Paragraph 29(1) stipulates that a licensee who becomes aware of a situation described in subparagraphs 29(1)(a) to 29(1)(j) shall immediately make a preliminary report to the Commission of the location and circumstances of the situation and of any action that the licensee has taken or proposes to take with respect to it. "Immediate" means reporting to the CNSC as soon as OPG becomes aware that the situation or event is reportable, and initiating any required response actions.

Paragraph 29(2) of the *General Nuclear Safety and Control Regulations* stipulate that every licensee who becomes aware of a situation referred to in subsection 29(1) shall file a full report of the situation with 21 days after becoming aware it and the report shall contain the following information: the date, time and location of becoming aware of the situation;

(a) a description of the situation and the circumstances;
(b) the probable cause of the situation;

(c) the effects on the environment, the health and safety of persons and the maintenance of security that have resulted or may result from the situation;

(d) the effective dose and equivalent dose of radiation received by any person as a result of the situation; (not applicable for site preparation); and,

(e) the actions that the licensee has taken or proposes to take with respect to the situation.

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.

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.

It is expected that OPG will develop a table of contents for the annual report, in advance of the submission for CNSC staff review.

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	
N286.7	Quality assurance of analytical, scientific and design computer programs for nuclear power plants	1999 (Reaffirmed 2012)	

Licensee documents that require notification of change

Document Title	Document #	e-Doc	Prior Notification
Reactor Safety Program	N-PROG-MP-0014	6416335	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 submit additional geotechnical and seismic hazard assessments prior to the submission of a licence to construct application, once a design is selected for the DNNP site.

CSA standard N286.7, Quality assurance of analytical, scientific and design computer programs for nuclear power plants is to be followed.

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
- 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 civil works includes excavation for the nuclear facility, 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, including:
        - reactor building and turbine-generator block;
        - auxiliary power buildings and switchyard;
        - cooling tower structures, water intakes and outlets;
    - 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	
REGDOC-2.5.2	Design of Reactor Facilities: Nuclear Power Plants	2014	
CSA N288.2	Guidelines for calculating the radiological consequences to the public of a release of airborne radioactive material for nuclear reactor accidents	2014	
NBCC	National Building Code of Canada	*	
NFC	National Fire Code of Canada	*	

**Those codes are to be used for site preparation, SSCs and infrastructure that is identified as not important to safety and is within the jurisdiction of this license (i.e. within the security fence of the site). The version of NBCC and NFC shall be the current one at the time the Licensee is freezing their Design Requirements and shall be submitted to CNSC staff for acceptance*.

Licensee documents that require notification of change

Document Title	Document #	e-Doc	Prior Notification
Design Management	N-PROG-MP-0009	6416335	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*

As described in deliverable D-P-3.5 in the OPG commitments report, the EPC will prepare an Erosion and Sediment Control Plan. OPG will review and accept the EPC's Erosion and Sediment Control Plan prior to the commencement of the licensed activities.

PHYSICAL DESIGN

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 will be necessary for detailed analyses and design as part of the confirmatory stage in order to, for example, ensure that the anticipated earth structures are 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
- REGDOC2.5.2, *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 perform 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

OPG has committed to ensure the development of an Occupational Health & Safety (OHS) plan (Deliverable D-P-2.1 in OPG's commitment report) to include a description of processes/methods to receive OPG facility (DWMF and DNGS) perimeter radiation data and interpret results to verify workers are not receiving doses in excess of limits for non-Nuclear Energy Workers. This plan will be incorporated as a CVC upon its review and acceptance by CNSC staff.

If nuclear substances above exemption quantities are encountered during site preparation activities, appropriate radiation protection measures will need to be put in place to monitor and control exposures to persons.

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 #	e-Doc	Prior Notification
Health and Safety Policy	OPG-POL-0001	6416335	No
Health and Safety Management System Program	OPG-PROG-0010	6416335	No
Respiratory Protection	OPG-PROC-0132	6416335	No

The licensee has the prime responsibility for safety at all times. This responsibility cannot be delegated or contracted to another organization or entity. 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 plan to ensure that workers will be protected against health and safety hazards encountered during site preparation activities. OPG will review EPC's Health and Safety plans 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 incorporated including.

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 regulatory document 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	
N288.5	Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills	2011	
REGDOC-2.9.1	Environmental Protection: Environmental Principles, Assessments and Protection Measures, Version 1.1	2017	
N288.4	Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills	2010	
N288.7	Groundwater protection programs at Class I nuclear facilities and uranium mines and mills	2015	
N288.6	Environmental risk assessments at Class I nuclear facilities and uranium mines and mills	2012	

Licensee documents that require notification of change

Document Title	Document #	e-Doc	Prior Notification
Monitoring of Nuclear and Hazardous Substances in Effluents	N-STD-OP-0031	6416335	No
Environmental Approvals	N-PROC-OP-0037	6416335	No
Environmental Policy	OPG-POL-0021	6416335	No
Environment, Health and Safety (EHS) Managed Systems	OPG-PROG-0005	6416335	No
Contaminated Lands and Groundwater Management	N-PROC-OP-0044	6416335	No
Hazardous Material Management	OPG-PROC-0126	6416335	No
Management of the Environmental Monitoring Programs	N-PROC-OP-0025	6416335	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 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.

ENVIRONMENTAL PROTECTION

OPG's DNNP Program shall be compliant with CSA N288.5-2011 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 assure 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 Environment, Health and Safety (EHS) Managed Systems as being in accordance with the standard.

OPG-POL-0021, *Environmental Policy*, and OPG-PROG-0005, *Environment, Health and Safety (EHS) 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, the EPC 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 and accept the EPC's Environmental Management and Protection Plans prior to the commencement of site preparation activities, and perform independent assessments, and

witnessing and surveillance of the EPC's work activities to ensure that the 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 on or both of:
    - exposure of receptors to those substances;
    - 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.

DNNP'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, *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 measured and potential quantities of hazardous substance in the environment (abiotic and biotic) of the DNPP. This aspect is link 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.

ENVIRONMENTAL PROTECTION

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:

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, to protect the health and safety of persons, to ensure the maintenance of national security, as well as measures to assist off-site planning authorities regarding an accidental release for:

- Planning and preparing to limit the effects;
- Notification;
- Reporting of information during and after;
- Assisting off-site authorities with dealing with effects; and,
- Testing the implementation of the measures to prevent or mitigate the effects.

As part of the 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.

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	
REGDOC-2.10.1	Nuclear Emergency Preparedness and Response, Version 2	2016	

Licensee documents that require notification of change

Document Title	Document #	e-Doc	Prior Notification
Consolidated Nuclear Emergency Plan	N-PROG-RA-0001	6416335	Yes

The licensee shall implement and maintain programs to ensure emergency preparedness. These programs shall comply with the requirements set out in CNSC regulatory document REGDOC-2.10.1, *Nuclear Emergency Preparedness and Response*.

The emergency program consists of a description to cope with accidental releases. This program encompasses both emergency preparedness and emergency response measures. It ensures that appropriate emergency response capabilities are developed and maintained available for use.

Consolidated Nuclear Emergency Plan N-PROG-RA-0001 describes OPG's controls, such as notification, protective actions, sheltering and evacuation in the event of a nuclear emergency at the adjacent DNGS. It is predominantly conceived to deal with releases of radioactive materials from fixed facilities and to outline interfaces with the Provincial Nuclear Emergency Response Plan (PNERP).

As described in deliverable D-P-5 Emergency Management and Fire Protection Plans in the OPG commitments report, the EPC will prepare an Emergency Response and Evacuation Plan. OPG will review and accept the EPC's Emergency Response and Evacuation Plan prior to the commencement of the licensed activities.

Recommendations and Guidance:

The licensee should provide emergency communications outlining what surrounding community residents need to know and do before, during and after a nuclear emergency. Information should be in plain language, readily accessible and include the following:

- How the public is notified of an emergency;
- What protective actions may be required during an emergency;
- What the public is expected to do, and why, when directed to take protective actions;
- What the public can do now to be better prepared for an emergency; and,
- Where can the public get more information on emergency plans.

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, the EPC will prepare a Fire Prevention and Response Plan. OPG will review and accept the EPC's Fire Prevention and Response Plan prior to the commencement of the licensed activities.

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	

Licensee documents that require notification of change

Document Title	Document #	e-Doc	Prior Notification
Environment, Health and Safety (EHS) Managed Systems	OPG-PROG-0005	6416335	No

If nuclear substances above exemption quantities are encountered during site preparation activities, appropriate measures, such as OPG's 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, the EPC 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:

The *Class I Nuclear Facilities Regulations* require that a licence application contain the proposed plan for decommissioning of the nuclear facility.

The decommissioning plan includes strategies for the management of low and intermediate level waste, reactor and decommissioning to restore the site to original conditions.

Licensee are also required to provide a description of any proposed financial guarantee relating to the activity to be licensed.

OPG originally submitted NK054-PLAN-00960-00001, *Preliminary Decommissioning Plan (PDP) OPG New Nuclear at Darlington Site – Site Preparation* to describe the decommissioning activities to restore the site to a brown-field state in the event the project is cancelled after the site has been prepared for the future construction and operation of the NND generating station.

By letter dated October 12, 2010, OPG revised its decommissioning strategy given that the initial PRSL does not include work that would require decommissioning of the site should the project be cancelled. If the project is cancelled under the initial PRSL, decommissioning of the site would not be required and OPG would use the site in support of the existing licensed facilities. OPG will provide an updated PDP in accordance with CSA N294-09 if OPG decides to apply for an amendment to the PRSL to allow for more substantive site preparation works to be completed that would accrue a decommissioning liability.

Compliance Verification Criteria:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
N294	Decommissioning of facilities containing nuclear substances	2009	

Licensee documents that require notification of change

Document Title	Document #	e-Doc	Prior Notification
Decommissioning Program	W-PROG-WM-0003	6416335	Yes
Preliminary Decommissioning Plan OPG New Nuclear at Darlington Site – Site Preparation	NK054-PLAN-00960-00001	6416335	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.

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.

Recommendations and Guidance:

CNSC guidance document G-219 Decommissioning Planning for Licensed Activities, June 2000, provides guidance when performing decommissioning planning for licensed activities.

REGDOC-2.11.2, Decommissioning, was published January 2021. OPG will provide an implementation plan upon request.

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:

a) 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	
REGDOC-2.12.2	Site Access Security Clearance	2013	
N290.7	Cyber security for nuclear power plants and small reactor facilities	2014	

Licensee documents that require notification of change

Document Title	Document #	e-Doc	Prior Notification
Darlington Nuclear Generating Station Security Report	8300-REP-61400-10003	6416335	Yes
Nuclear Security	N-PROG-RA-0011	6416335	Yes
Cyber Security	OPG-PROG-0042	6416335	Yes
Cyber Security	N-PROC-RA-0135	6416335	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*.

The licensee shall implement measures for the purpose of preventing and detecting unauthorized entry into a protected area or inner area at the site, including:

- Vehicle barriers and vehicle access control points;
- Perimeter intrusion detection systems and devices;
- Closed-circuit video systems/ devices for applications in a protected area or inner area;
- Security monitoring rooms; and,
- Security monitoring rooms systems and devices.

SECURITY

Licensee shall develop, implement and maintain a cyber-security program to protect against cyber-attacks on the critical cyber assets for nuclear safety, nuclear security, and emergency preparedness functions.

The licensee's cyber-security program shall be implemented and maintained to protect the cyber-critical assets for nuclear safety, physical protection and emergency preparedness functions from cyber-attacks. The cyber-security program includes the following elements:

- Roles and responsibilities;
- Policies and procedures;
- Staff training and awareness;
- Overall approach to cybersecurity;
- Configuration management;
- Incident response and recovery;
- Periodic self-assessments;
- Security controls; and,
- Identification and classification of cyber-critical assets.

CSA standard N290.7-14, *Cyber security for nuclear power plants and small reactor facilities*, addresses the securing of cyber essential assets against cyber-attacks.

As described in deliverable D-P-7 Site Security Plan in 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 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),* and IAEA Nuclear Security Series No. 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 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 should engage with CNSC staff during the LTPS phase once a reactor technology has been selected to support development of a preliminary Design Information Questionnaire (DIQ), so that OPG can meet the requirement to provide preliminary design information to the CNSC (and the IAEA) in the initial 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	

Licensee documents that require notification of change

Document Title	Document #	e-Doc	Prior Notification
Nuclear Safeguards	N-PROG-RA-0015	6416335	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 Canadian compliance with the safeguards agreements entered into with the International Atomic Energy Agency (IAEA), and are consistent with modern national and international practices. 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 D 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.

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 JRP 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 34.4 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 and as a result, their habitat is protected under the *Species at Risk Act* (SARA). As such, OPG will have to act in accordance to the SARA regarding the protection of bank swallows. In addition to bank swallows, appropriate permits must be obtained for all species identified as species at risk.

OPG has committed that "all implementing documents required for site preparation will be in place prior to the start of the licensed activities". 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:

Licensee documents that require notification of change

Document Title	Document #	e-Doc	Prior Notification
Darlington New Nuclear Project Commitments Report	NK054-REP-01210-00078, Rev 0006	6416335	Yes

OPG shall implement the mitigation measures proposed and commitments made during the JRP process, in accordance with the OPG commitments report. Appendix D 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:

Phase	Recommendation #	Topic	OPG Commitment
Prior to Site Preparation	2	Soil Quality	D-P-3.6
	6	Preliminary Decommissioning Plan	D-P-3.1
	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
During Site Preparation	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
Over the Life of the Project	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. OPG shall submit the documents no later than 90 calendar days prior to the planned commencement of the licensed activities, or as otherwise agreed to.

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
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:

Licensing Basis Publications

Document Number	Document Title	Version	Effective Date
CAN/CSA ISO 14001-15	Environmental Management Systems	2018	
CSA N288.4-10	Environmental Monitoring Program at Class 1 Nuclear Facilities and Uranium Mines and Mills	1999 (Reaffirmed 2012)	

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"* on follow-up programs (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 include:

- 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.
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 R006, and as listed below.

#	Deliverables for Completion
D-P-12.1	Environmental Monitoring and Environmental Assessment Follow- up Plan
D-P-12.2	EPC Methodology Reports for Environmental Monitoring and EA Follow-up for Atmospheric Environment.
D-P-12.3	EPC Methodology Reports for Environmental Monitoring and EA Follow-up for. Surface Water Environment.
D-P-12.4	EPC Methodology Reports for Environmental Monitoring and EA Follow-up for Aquatic Environment.
D-P-12.5	EPC Methodology Reports for Environmental Monitoring and EA Follow-up for Terrestrial Environment.
D-P-12.6	EPC Methodology Reports for Environmental Monitoring and EA Follow-up for Geological and Hydrogeological Environment.
D-P-12.7	EPC Methodology Reports for Environmental Monitoring and EA Follow-up for Land Use.
D-P-12.8	EPC Methodology Reports for Environmental Monitoring and EA Follow-up for Traffic and Transportation.
D-P-12.9	EPC Methodology Reports for Environmental Monitoring and EA Follow-up for Health – Non-Human Biota and Human Health.

SITE SPECIFIC

Environmental Monitoring and Environmental Assessment Follow-up Plan and methodology reports for each environment component to be completed prior to the commencement of PRSL licensed activities. OPG will review and accept the EPC's Environmental Monitoring and Environmental Assessment Follow-up documents prior to the commencement of the licensed activities.

These reports shall be provided to the CNSC, for review and acceptance, no later than 90 calendar days prior to commencement of PRSL 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.

Recommendations and Guidance:

Appendix A, section A.3.10 EA follow-up program, of CNSC's REGDOC-2.9.1, Environmental Protection: Environmental Policy, Assessments and Protection Measures.

Section 12, EA follow-up programs, of CNSC's 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's REGDOC-3.2.2: Aboriginal Engagement.

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 requirements 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.

["Assure Compliance" CNSC process document: "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, New Major Facilities Licensing Division;
- The Director General, Directorate of Regulatory Improvement and Major Projects Management; 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 N286-05, "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
NND	OPG New Nuclear at Darlington
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
SQ	Seismic Qualification
SSC	Structures, Systems and Components
WN	Written Notification

APPENDIX A – ADMINISTRATIVE PROCESSES

A1. Administrative Processes

This appendix describes the administrative process necessary for managing the LCH, such as delegation of authority, change control, reporting to Commission, document version control, record-keeping and dispute resolution.

A1.1 Delegation of Authority by the Commission

Delegations of authority are recorded in the Commission "Record of Proceedings, Including Reasons for Decision", but they may be documented elsewhere by the Commission.

For licence condition 3.2, the Commission has delegated authority to the following CNSC staff:

- Director, New Major Facilities Licensing Division;
- Director General, Directorate of Regulatory Improvement and New Major Projects Management; and,
- Executive Vice President and Chief Regulatory Operations Officer, Regulatory Operations Branch.

A1.2 Activities Authorized Under Other Regulatory Approvals

Additional authorizations/permits from other regulatory agencies will be required to undertake the proposed project activities during the site preparation phase. It is OPG's responsibility to meet all applicable federal, provincial and municipal regulatory requirements and obtain the appropriate authorizations from other regulatory authorities which exist outside of the context of the Nuclear Safety and Control Act.

A2. 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:

- Preparation and use of the LCH is properly controlled;
- All referenced documents are correctly identified and maintained;
- Changes are conducted in accordance with CNSC REGDOC-3.5.3, *Regulatory Fundamentals*; and,
- Procedures for modifying the LCH are followed.

The licensing basis is defined at licence issuance/renewal. The principles for achieving compliance with the licensing basis will not change greatly during the licence period. However, changes to the LCH may be requested by either CNSC staff or the licensee, which impact the specific details of these principles in order to achieve greater clarity and achieve 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 with the LCH may reveal instances where the Compliance Verification Criteria text may leave room for varying interpretation between the licensee and CNSC staff, Such instances would require further clarity;
- The transitional provisions for new codes, standards and regulatory documents, which are documented in the compliance verification criteria, may be revised. Assuming that the implementation plan was part of the licence application (and hence part of the licensing basis), such a development would result in a LC non-compliance and CNSC staff modifying the date and taking any necessary other actions, including possible enforcement action, based on the time at risk;
- As a result of a licensing decision being issued by the Commission. (i.e., amendment to the licence). One example is the inclusion of, or revision to, regulatory documents, codes and standards. These amendments may involve amending the CVC in the LCH; and,
- 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, that include the licensee's alternative cost effective approach where applicable, CNSC staff will review the proposed changes, as required by CNSC regulatory policy P-242, *Considering Cost-benefit Information*, and decide if the LCH should be modified. The CNSC document, *Risk Informed Approach for the CNSC Power Reactor Regulatory Program – Basis Document*, contains information on how to consider cost benefit information in licensee submissions.

The Director General, Directorate of Power Reactor Regulation, has the authority to approve changes to the LCH.

In order to effect a modification to the LCH, the CNSC Regulatory Program Officer will:

- Initiate a request using the Document Change Request (DCR) Form;
- Coordinate the review by the identified Subject Matter Expert;
- Consult licensee, as required;
- Obtain endorsement from the Director, New Major Facilities Licensing Division
- Obtain approval and signature from the DG of DRIMPM;
- Update the LCH and the registry used to track the version history and e-Doc number of the WN documents; and,
- Distribute the updated version of the LCH.

If the change involves the revision of a WN document, the Regulatory Program Division will also update the registry it uses to track the version history and e-Doc number of the WN documents.

A.3 Reporting to the Commission

Changes to the LCH will be tracked through the DCR. CNSC staff will summarize all the changes made to the LCH and report them to the Commission for information in the CNSC staff's annual report entitled "Integrated Safety Assessment of Canadian Nuclear Power Plants". This report is presented annually in a public proceeding of the Commission at a scheduled date. The report should emphasize instances where the CVC were relaxed (such as modifying target dates as discussed above).

CNSC staff will review the content of the LCH annually to ensure that the collective changes made to the document did not result in an unauthorized 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 reported to the Commission annually.

A.4 Document Control and Approval/Consent

A.4.1 Document Control and Oversight

Whenever proposed changes to version control documents are accepted by the CNSC, the compliance verification criteria in the LCH must be updated (per the LCH change control process described in Appendix A.2). The Director General, Directorate of Power Reactor Regulation, has the authority to make the 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. WN documents do not require prior Commission approval or CNSC staff consent of changes, but the changes are still reviewed by CNSC staff. Changes to WN documents are not tracked through the LCH; they are tracked by the CNSC licensing division using the registry described in Section A.2.

A.4.2 Approval/Consent of Changes (other than document changes)

CNSC facility operating licences may include LCs that address situations where the licensee has to apply to make, or at least provide notification before making, a change that is not linked to a specific document. The LCH may also specify similar mechanisms. These situations could include potential design, organizational, or operational changes. The LC or LCH could indicate that the change must be approved by the Commission.

Alternately, the LC or LCH may indicate the circumstances under which consent for the change can be granted by a delegated authority. In some cases, the associated compliance verification criteria in the LCH may indicate specific criteria that the Commission and/or delegated authority would assess when considering the request for approval/consent.

A.4.3 CNSC Review Criteria Related to Document Changes and Approvals/Consent

For the approvals of document changes or other changes described above in Sections A.4.1 and A.4.2 the CNSC checks that the licensee 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 (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/action:

- The proposed change or action will be made or done in accordance with 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 the requirements set out in the applicable laws, regulations and licence conditions, including appendices of the licence; and,
- 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.

(The above criteria can also apply when CNSC 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 not, consideration of the change must be turned from the delegated authority back to the Commission.

A.5 Record Keeping

A.5.1 Records Management

The DCR and accompanying documentation will be archived in Records and referenced in the Revision History section of the LCH. Marked-up documents by the reviewers and any other supporting information will be kept in Records Office (File No. 2.01). Electronic communication related to the change, such as comments from reviewers will be stored in the CNSC's "e-Access."

A.5.2 Distribution

A copy of the updated version of the LCH will be provided to the following:

- Responsible Regulatory Program Director;
- Responsible Site Office;
- Responsible Administrative Assistant; and,
- Licensee's single point of contact.

LICENCE CONDITIONS HANDBOOK CHANGE REQUEST FORM

		E-Docs File Plan No. 2.01 **DCR E-Docs No.**
Document Title	**Current Rev No.**	**Document's E-Docs No.**
REVISION REQUEST INFORMATION		
Requestor	**Division**	**Date of Request: MM / DD / YY**
Line Manager	☐ **Concur with request** ☐ **Do Not Concur**	
Description of Problem to be Resolved: (additional space on reverse of form)		
Proposed Changes: (additional space on reverse of form)		
Other Documents Potentially Affected by Proposed Changes		
SUBJECT MATTER EXPERT (SME) ASSESSMENT OF DCR		
SME	☐ **Concur with request** ☐ **Do Not Concur**	**Date: MM / DD / YY**
Assessment Comments:		
Revisions to be Reviewed by: (Check off all applicable divisions)		
Director General – Directorate of Regulatory Improvement and Major Projects Management		
Name	**Change Request Approved** ☐ YES ☐ NO	**Date: MM / DD / YY** / **Signature**

APPENDIX A – Administrative Processes

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	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	2014	1.1	CNSC Website
REGDOC-2.5.2	Design of Reactor Facilities: Nuclear Power Plants	2014	5.1	
REGDOC-2.9.1	Environmental Protection: Environmental Principles, Assessments and Protection Measures, Version 1.1	2017	9.1	CNSC Website
REGDOC-2.10.1	Nuclear Emergency Preparedness and Response	2014	10.1	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

B.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
NRC	National Building Code of Canada	current version	5.1
NRC	National Fire Code of Canada	current version	5.1
N288.1	Guidelines for calculating derived release limits for radioactive material in airborne and liquid effluents for normal operation of nuclear facilities	2014	9.1
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 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 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-CORR-00531-00151	Revised Financial Guarantee in the Event that the OPG New Nuclear at Darlington Project is Cancelled	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-0010	Health and Safety Management System Program	When implemented	1.1 8.1

Document #	Document Title	Notification Requirements	L.C.
OPG-PROG-0039	Project Management	When implemented	1.1
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	3.1
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-0001	Engineering Change Control	When implemented	5.1
N-PROG-MP-0009	Design Management	When implemented	5.1 5.2
FITNESS FOR SERVICE			
RADIATION PROTECTION			
CONVENTIONAL HEALTH AND SAFETY			
OPG-POL-0001	Health and Safety Policy	When implemented	8.1
OPG-PROG-0010	Health and Safety Management System Program	When implemented	1.1 8.1
OPG-PROC-0132	Respiratory Protection	When implemented	8.1

Document #	Document Title	Notification Requirements	L.C.
ENVIRONMENTAL PROTECTION			
OPG-POL-0021	Environmental Policy	When implemented	9.1
OPG-PROG-0005	Environment, Health and Safety (EHS) Managed Systems	When implemented	9.1 11.1
N-PROC-OP-0025	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
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 (EHS) 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			
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
N-PROG-RA-0042	Cyber Security	PRIOR to implementation	12.1

Document #	Document Title	Notification Requirements	L.C.
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, Rev 0006	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 D – 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. 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.	Preliminary Decommissioning Plan, D-P-13.1

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
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 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.	Noise, D-P-3.2

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
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 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	Water Quality, D-P-12.3

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
		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. 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.	Site Layout, D-P-3.7, D-P-14.1
22	The Panel recommends that the Canadian Nuclear Safety Commission require OPG to develop a	The Government of Canada accepts the intent of this recommendation to require OPG to develop a	Insects, amphibians, reptiles, and mammals,

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	follow-up program for insects, amphibians and reptiles, and mammal species and communities to ensure that proposed mitigation measures are effective.	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
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 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	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.	Traffic Management, D-P-10.1

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	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.		

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 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.	Bluff Removal and Lake Infill, D-P-3.8, D-P-14.1, D-P-16.1
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	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	Geotechnical, D-P-9.1

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	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.	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.	
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.	Groundwater, D-P-12.6
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	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.	Loss of Ponds, D-P-3.7

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	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 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.	
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.	Birds, D-P-3.7
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,	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	Bank Swallows, D-P-3.8

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	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.	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.	
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	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.	Impingement and entrainment sampling, Once through cooling, D-P-12.4, D-P-15.1, D-C-1.2

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	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.		
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 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	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-P-9.1, D-P-9.4

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	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 ○ 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.		

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	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 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.	Socio-economic Impacts, D-P-17.1

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.	Cooling Options BATEA, D-C-1.1

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
		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.	
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	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	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 – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	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	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.	
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	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	D-C-1.2

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	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 and the diffuser of the proposed condenser cooling water system.	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 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	The Government of Canada accepts the intent of this recommendation to require OPG to determine the total area of permanent aquatic effects from	Once-through Cooling, D-C-1.2, D-P-12.4

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	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.	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.	
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	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

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	mitigation/design modifications, to the satisfaction 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
50	The Panel recommends that prior to construction, Transport Canada require OPG to conduct a risk	The Government of Canada recognizes that the CNSC has the statutory authority and powers to	Rail Safety, D-C-3.1

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	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.	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.	
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	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.	Once-through Cooling, D-P-12.8

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	program, if required, to mitigate potential effects to small watercraft.		
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 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.	Malfunctions &Accidents, D-C-3.1

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
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

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.	

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
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 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 – List of Licensee Documents Requiring Written Notification

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 technical expertise to the Canadian Nuclear Safety	Birds, D-P-12.5

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
		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 present, further assessment to reduce the overall uncertainty in the seismic hazard assessment during the design of the Project	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

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	must be conducted. • During site preparation and/or prior to construction: o verification and confirmation of the absence of surface faulting in the overburden and bedrock at the site. • Prior to construction: o 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; o assessment of potential liquefaction of the northeast waste stockpile by using the data obtained from the pile itself upon completion of site preparation; o 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; o assessment of the potential settlement in the quaternary deposits due to the groundwater drawdown caused by future St. Marys Cement quarry activities; and, o assessment of the effect of the potential settlement on buried infrastructures in the deposits during the design of these infrastructures. • Prior to operation:		

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	○ 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

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	The Government of Canada accepts this	Aquatic, D-P-12.4, D-P-15.1

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	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.	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.	
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.	Aquatic, D-P-12.4, D-P-15.1
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	The Government of Canada accepts this recommendation. Fisheries and Oceans Canada will work with the Canadian Nuclear Safety Commission and Ontario Power Generation to	Aquatic, D-P-12.4

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	OPG Deliverable
	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.	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*.	
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 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.	Air Quality, D-P-12.2

APPENDIX C – List of Licensee Documents Requiring Written Notification

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 Envelope, the Panel recommends that a new environmental assessment be	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

#	JRP Recommendation	Government of Canada Response	Responsible Party and Project Phase
	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 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	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.	CNSC Over the Life of the Project

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	Responsible Party and Project Phase
	regulations at all jurisdictional levels.		
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 Response Plan (PNERP), to protect human health and safety.	This recommendation was directed to the Government of Ontario.	Government of Ontario Over the Life of the Project
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	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.	Health Canada, CNSC Over the Life of the

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	Responsible Party and Project Phase
	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 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*.	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
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	Government of Canada Over the Life of the Project

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	Responsible Party and Project Phase
		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.	
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 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	Government of Canada General

APPENDIX C – List of Licensee Documents Requiring Written Notification

#	JRP Recommendation	Government of Canada Response	Responsible Party and Project Phase
		conducted.	

APPENDIX C – List of Licensee Documents Requiring Written Notification

APPENDIX E – RESOLUTION OF CONFLICTS OR INCONSISTENCIES

L.C.	Subject of Conflict or Inconsistency	e-Doc #	Identifier	Approved Date

CURRENT LICENCE

e-Doc 3853682 (Word)

e-Doc 3990795 (PDF)

Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

PDF Ref.: E-DOCS #3990795
Word Ref.: E-DOCS #3853682
File / Dossier: 2.01

NUCLEAR POWER REACTOR SITE PREPARATION LICENCE

OPG NEW NUCLEAR AT DARLINGTON GENERATING STATION

I) LICENCE NUMBER: **PRSL 18.00/2022** **(Effective Date: August 17, 2012)**

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 August 17, 2012 to August 17, 2022, 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 Drawing, NK054-DRAW-01210-00007, 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 NEW NUCLEAR AT DARLINGTON GENERATING STATION - SITE PREPARATION LICENCE CONDITIONS HANDBOOK (LCH)" provides compliance verification criteria in order to meet the conditions listed in this licence. The LCH also provides information regarding delegation of authority and applicable versions of documents.

VI) CONDITIONS:

1. General

1.1 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.

1.2 The licensee shall conduct the activities described in Part IV of this licence in accordance with the licensing basis.

1.3 The licensee shall give written notification to the Commission, or person authorized by the Commission, of any changes made to the documents needed to support the licence application.

1.4 The licensee shall report any apparent material non-compliance to applicable law at the federal, provincial or municipal level that pertains to the activities described in Part IV of this licence to the Commission, or person authorized by the Commission.

1.5 The licensee shall provide, at no expense to the Commission, office space for employees of the Commission who customarily carry out their functions on the site premises (on-site Commission staff). The licensee shall keep the office space of on-site Commission staff separate from the remainder of the building in which it is located by walls, partitions or other suitable structures.

1.6 The licensee shall, in the event of any conflict or inconsistency between licence conditions, codes, standards or regulatory documents referenced in this licence, direct the conflict or inconsistency to the Commission, or a person authorized by the Commission, for resolution.

2. Management System

2.1 The licensee shall implement and maintain a management system in accordance with the requirements of Canadian Standards Association (CSA) standard N286: MANAGEMENT SYSTEM REQUIREMENTS FOR NUCLEAR POWER PLANTS.

3. Human Performance

3.1 The licensee shall implement and maintain safety and control measures to ensure that personnel are qualified and competent to perform assigned work.

4. Operating Performance (Conduct of the Licensed Activity)

4.1 The licensee shall implement and maintain safety and control measures for the conduct of site preparation activities.

4.2 The licensee shall implement safety and control measures for reporting to the Commission, or person authorized by the Commission, that includes reporting of all events required by the *Nuclear Safety and Control Act* and associated Regulations.

4.3 The licensee shall submit to the Commission, or person authorized by the Commission, an annual report on the licensed activities.

5. Conventional Health and Safety

5.1 The licensee shall implement and maintain safety and control measures for occupational health and safety.

6. Environmental Protection

6.1 The licensee shall implement and maintain safety and control measures for environmental protection in accordance with the requirements of CNSC regulatory standard S-296: ENVIRONMENTAL PROTECTION, POLICIES, PROGRAMS AND PROCEDURES AT CLASS I NUCLEAR FACILITIES AND URANIUM MINES AND MILLS.

7. Emergency Management and Fire Protection

7.1 The licensee shall implement and maintain safety and control measures for emergency preparedness and fire protection.

8. Waste Management

8.1 The licensee shall implement and maintain safety and control measures for waste management.

8.2 The licensee shall maintain a preliminary decommissioning plan for site preparation in accordance with the requirements of Canadian Standards Association (CSA) standard N294: DECOMMISSIONING OF FACILITIES CONTAINING NUCLEAR SUBSTANCES. The preliminary decommissioning plan shall be revised every five years or when required by the Commission, or person authorized by the Commission.

9. Security

9.1 The licensee shall implement and maintain safety and control measures for site security.

10. Site Specific

10.1 The licensee shall implement the mitigation measures proposed and commitments made during the Darlington Joint Review Panel process.

10.2 The licensee shall implement the applicable recommendations of the Darlington Joint Review Panel Report in accordance with the Government of Canada response.

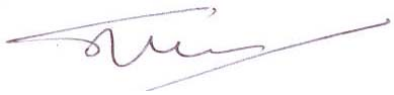
10.3 The licensee shall implement and maintain an environmental assessment follow-up program.

10.4 The licensee shall maintain a financial guarantee that is acceptable to the Commission which shall remain valid and in effect to adequately fund the preliminary decommissioning plan referenced in condition 8.2 of this licence.

10.5 The licensee shall implement and maintain a public information program in accordance with the requirements of CNSC regulatory document RD/GD-99.3: PUBLIC INFORMATION AND DISCLOSURE.

10.6 The licensee shall submit to the Commission, or person authorized by the Commission, the proposed quality assurance program for the design of the nuclear facility upon the selection of a reactor technology.

SIGNED at OTTAWA on August 17, 2012



Alan R. Graham
Chair, Joint Review Panel
Canadian Nuclear Safety Commission