Record of Decision

DEC 24-H2

In the Matter of

Applicant	Ontario Power Generation Inc.
Subject	Determination of Applicability of Darlington New Nuclear Project Environmental Assessment to OPG's Chosen Reactor Technology
Public Hearing Dates	January 23-25, 2024
Record of Decision Date	April 19, 2024

RECORD OF DECISION – DEC 24-H2

Applicant:	Ontario Power Generation, Inc.
Address/Location:	230 Westney Road South, Ajax, ON, L1S 7P9
Purpose:	Determination of applicability of Environmental Assessment to OPG's chosen reactor technology for the Darlington New Nuclear Project
Application received:	October 31, 2022
Dates of public hearing:	January 23-25, 2024
Location:	Ajax Convention Centre, 550 Beck Crescent, Ajax, ON, L1Z 1C9 and virtually via Zoom
Members present:	T. Berube, Acting President M. Lacroix A. Hardie J. Hopwood V. Remenda
Deputy Registrar:	M. Bacon-Dussault
Recording Secretary:	R. Dranga
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Intervenors		
See Appendix A		
Other Government Representative		
Emergency Management Ontario: R. Reid Environment and Climate Change Canada: D. Kim and S. Longo York-Durham District - Ministry of the Environment, Conservation and Parks: J. Butchart		

Determination as per Government of Canada's response to Recommendation 1 of the Joint Review Panel:

BWRX-300 is not fundamentally different from the technologies assessed in the Environmental Assessment (EA)

and

a new EA is not required

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1.0 INTRODUCTION

1. The Darlington New Nuclear Project (DNNP or Project)[1] is a proposal by Ontario Power Generation (OPG or Proponent) for the site preparation, construction, operation, decommissioning and abandonment of up to four new nuclear reactors at its existing Darlington Nuclear site. The Darlington Nuclear site is in the Municipality of Clarington, Ontario, on the traditional territory of the Wendat, Anishinabek Nation, and the territory covered by the Williams Treaties with the Michi Saagiig and Chippewa Nations. OPG currently holds a power reactor site preparation licence for the DNNP.

2. The DNNP was subject to an Environmental Assessment (EA) conducted by a Joint Review Panel (JRP) under the *Canadian Environmental Assessment Act*[2] (CEAA 1992). At the time the Environmental Impact Statement (EIS) was prepared for the EA, which the legislation directed should be done as early as practicable in the planning process of a project, the Government of Ontario had not yet selected a specific reactor technology. OPG therefore prepared its EIS using a "plant parameter envelope" (PPE)[3] approach, and the EA examined the potential environmental effects of several possible reactor technologies expected to generate up to 4,800 megawatts of electricity for delivery to the Ontario grid.

3. In its EA Report,[4] the JRP concluded that the DNNP is "not likely to cause significant adverse environmental effects, provided the mitigation measures proposed and commitments made by OPG during the review and the Panel's recommendations are implemented." The recommendations were directed by the JRP to specific Responsible Authorities (RA) and Federal Authorities with responsibilities or roles in the Project under CEAA 1992, as well as the Government of Canada, the Government of Ontario, the Municipality of Clarington and OPG. The JRP acknowledged that the selection of a reactor technology not already covered in the PPE would require careful review to confirm the continued applicability of the EA, and that this determination would be made by the RAs at the time that the reactor technology is selected. The JRP's Recommendation #1 addressed the issue of this determination

> "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

[1] The site preparation licence was issued on August 17, 2012 and renewed on October 12, 2021 for a period of 10 years, until October 11, 2031.
[2] Statutes of Canada (S.C.) 1992, c. 37.
[3] The plant parameter envelope is a set of data derived from available vendor information, for multiple reactor technologies, and provides a bounding envelope of plant design and site parameter values for use in the EA.
[4] Joint Review Panel, *Environmental Assessment Report – Darlington New Nuclear Power Plant Project*, August 2011.

> different from the specific reactor technologies bounded by the Plant Parameter Envelope, the Panel recommends that a new environmental assessment be conducted."

4. On May 2, 2012, the Government of Canada published its response to the EA Report (Government Response). In its response, the Government of Canada "accepted" or "accepted the intent"[5] of all of the EA Report recommendations to federal government departments. The Government of Canada concluded that the Project is not likely to cause significant adverse environmental effects, taking into consideration the EA Report and the implementation of any mitigation measures that the responsible authorities consider appropriate. The Government Response acknowledged that

> "any RA under the CEAA 1992 would 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."

5. On October 31, 2022, OPG applied to the Canadian Nuclear Safety Commission[6] for a licence to construct a reactor facility for its DNNP. Before it can consider OPG's application for a licence to construct (LTC) a reactor for the DNNP, the Commission must determine, in accordance with the Government Response to the JRP Recommendation #1, whether the chosen technology is fundamentally different from the technologies assessed in the EA, and whether a new EA is required.

[5] In the published Government Response, the Government of Canada defines "accept" and "accept the intent" as follows: "Where the Government of Canada "accepts" a recommendation, it means that the Government of Canada fully approves the recommendation and agrees to implement it as written. Where the Government of Canada "accepts the intent of a recommendation", the Government of Canada agrees with the underlying spirit of the recommendation but may not implement it precisely as written by the Joint Review Panel. […] Where the Government Response accepts or accepts the intent of these recommendations, it is understood that the JRP's recommendations will be given full and fair consideration by the Canadian Nuclear Safety Commission through future regulatory activities." Retrieved online from the Government of Canada's Response to the Joint Review Panel Report for the Proposed Darlington New Nuclear Power Plant Project in Clarington Ontario (Archived), Canadian Impact Assessment Registry - Archives (https://iaac-aeic.gc.ca/archives/evaluations/29525/document-html-eng_did=55542.html) on March 26, 2024.

[6] The *Canadian Nuclear Safety Commission* is referred to as the "CNSC" when referring to the organization and its staff in general, and as the "Commission" when referring to the tribunal component.

Issues

6. In accordance with the Government Response, the Commission, as the Responsible Authority, must determine:[7]

   a) whether the BWRX-300 reactor technology chosen by OPG for the Darlington New Nuclear Project is fundamentally different from the specific reactor technologies assessed by the JRP, and
   b) if a new EA is required.

7. The consideration of OPG's application for a licence to construct a reactor facility for its DNNP is not at issue for this hearing. Such consideration will be undertaken during a separate, future public hearing of the Commission.

8. As an agent of the Crown, the Commission recognizes its role in fulfilling the Crown's constitutional obligations, along with advancing reconciliation with Canada's Indigenous peoples. The Commission's responsibilities include the duty to consult and, where appropriate, accommodate Indigenous interests where the Crown contemplates conduct which may adversely impact potential or established Aboriginal[8] or treaty rights.[9] The Commission must consider whether the duty to consult is triggered by the determinations before it in this matter, and if so, whether that duty has been satisfied. Any duty to consult must be satisfied before the Commission can make the determinations directed by the Government of Canada's response to the JRP Recommendation #1.

Public Hearing

9. On April 3, 2023, the Commission published a Notice of Public Hearing[10] for this matter, which invited applications to intervene by November 20, 2023. The Commission subsequently published a revised notice on December 22, 2023,[11] confirming the dates and location of the hearing.

10. Pursuant to section 22 of the *Nuclear Safety and Control Act* (NSCA), the President of the Commission established a Panel of the Commission over which the Acting President would preside, including Commission Members Andrea

[7] These determinations are neither a licensing decision under the *Nuclear Safety and Control Act* (NSCA), nor an EA decision under the CEAA 1992. Rather, they flow from the EA decision that was made by the Government under the then-applicable CEAA 1992.
[8] "Aboriginal" is the term used in this document when referring to the Crown's duty to consult as that is the term used in s. 35 of the Constitution Act, 1982 and in CEAA 1992. In all other cases, "Indigenous" is the preferred terminology and used accordingly.
[9] *Haida Nation v. British Columbia (Minister of Forests)*, 2004 SCC 73; *Taku River Tlingit First Nation v. British Columbia (Project Assessment Director)*, 2004 SCC 74.
[10] *Notice of Public Hearing and Participant Funding*, CNSC, April 3, 2023.
[11] *Revised Notice of Public Hearing*, CNSC, December 22, 2023.

Hardie, Jerry Hopwood, Dr. Marcel Lacroix, and Dr. Victoria Remenda.[12] The Commission, in making its decision, considered information presented for the public hearing held from January 23 to 25, 2024 in Ajax, Ontario. The public hearing was conducted in accordance with the *Canadian Nuclear Safety Commission Rules of Procedure*[13] (the Rules). During the public hearing, the Commission considered written submissions and heard oral presentations from OPG (CMD 24-H2.1, CMD 24-H2.1A, CMD 24-H2.1B) and CNSC staff (CMD 24-H2, CMD 24-H2.A, CMD 24-H2.B, CMD 24-H2.C). The Commission also considered oral and written submissions from 40 intervenors (see Appendix A for a list of interventions). The hearing was webcast live via the CNSC website, and video archives are available on the CNSC's website.

Participant Funding Program

11. Pursuant to paragraph 21(1)(b.1) of the NSCA, the Commission has established a Participant Funding Program (PFP) to facilitate the participation of Indigenous Nations and communities, members of the public and interested parties in Commission proceedings. A total of $263,884 was awarded for the review of the EIS and PPE documents in respect of the applicability of the DNNP EA and PPE to OPG's selected reactor technology.

12. Participant funding was awarded in two phases. A Funding Review Committee (FRC), independent of the CNSC, reviewed the funding applications received and made recommendations on the allocation of funds for each of the following phases:

- In October 2022, funding was made available through the CNSC's PFP to facilitate Indigenous Nations and communities, members of the public and interested parties in the review of OPG's EIS Review and PPE for the DNNP. Based on the recommendations from the FRC, the CNSC awarded a total of $157,594 to 10 applicants:
    - Hiawatha First Nation - $8,250.00
    - Métis Nation of Ontario - $12,800.00
    - Canadian Coalition for Nuclear Responsibility - $15,000.00
    - Canadian Environmental Law Association - $15,750.00
    - Six Nation of Grand River - $7,500.00
    - Saugeen Ojibway Nation - $21,231.20
    - Radiation Safety Institute of Canada - $20,000.00

[12] The Panel of the Commission was established by President R. Velshi prior to the end of her term on October 13, 2023. Pursuant to subsection 12(2) of the NSCA, the Commission designated Dr. Timothy Berube as Acting President, while the Office of the President is vacant. Subsequently and also pursuant to subsection 12(2) of the NSCA, the Governor-in-Council approved the extension of the designation of Dr. Berube as acting President beyond 90 days; see P.C. 2023-1290. Dr. Berube presided over this public hearing.
[13] Statutory Orders and Regulations (SOR)/2000-211.

  - Northwatch - $17,781.00
  - Mississaugas of Scugog Island First Nation - $19,281.90
  - Nuclear Transparency Project - $20,000.00

- In April 2023, funding was made available through the CNSC's PFP to facilitate the review of the applicability of the DNNP EA and PPE to OPG's selected reactor technology, and to provide the Commission with value-added information through topic-specific interventions. Based on the recommendations from the FRC, the CNSC awarded a total of up to $113,220.63 to 9 applicants:[14]

  - Métis Nation of Ontario - $13,200.00
  - Gordon Edwards - $3,000.00
  - Canadian Environmental Law Association - $7,875.00
  - Nuclear Transparency Project - $10,000.00
  - Radiation Safety Institute of Canada - $10,000.00
  - Hiawatha First Nation - $20,790.00
  - Mississaugas of Scugog Island First Nation - $18,233.93
  - Northwatch - $8,890.50
  - Saugeen Ojibway Nation - $21,231.20

2.0 DECISION

13. The Commission, as an agent of the Crown, is satisfied that it has upheld the honour of the Crown and has fulfilled its common law obligations to consult and, where appropriate, accommodate Indigenous interests, pursuant to section 35 of the *Constitution Act, 1982*[15] relative to the Commission's considerations related to the applicability of the EA and plant parameter envelope to OPG's BWRX-300 chosen reactor technology.

14. Based on its consideration of the matter, as described in more detail in the following sections of this *Record of Decision*, the Commission concludes the following:

- OPG adequately assessed the changes to baseline environmental conditions for environmental components assessed in the EA
- 60 of the 198 parameters from the PPE are not applicable to the BWRX-300 reactor technology
- 130 of the 198 parameters are bounded by the PPE values and the EA
- the 8 parameters that are outside of the bounding scenarios in the PPE have been assessed and their effects are bounded by the EA

[14] In addition, the CNSC awarded funding to Curve Lake First Nation to meet with CNSC staff to discuss the applicability of the DNNP EA and PPE to OPG's selected BRX-300 reactor technology.
[15] *Constitution Act, 1982*, Schedule B to the *Canada Act 1982* (UK), 1982, c 11.

- the predicted environmental effects associated with the BWRX-300 reactor technology are bounded by the EA

Therefore, in response to the direction from the Government of Canada's response to the Darlington New Nuclear Project Joint Review Panel Recommendation #1,

> the Commission determines that:
> a) Ontario Power Generation Inc.'s selected reactor technology, the General Electric Hitachi BWRX-300 reactor, is not fundamentally different from the reactor technologies assessed in the Environmental Assessment for the Darlington New Nuclear Project; and
> b) a new Environmental Assessment is not required

15. With this determination, the Commission can proceed with the consideration of OPG's application for a licence to construct one BWRX-300 reactor unit at the DNNP site. The Commission will consider the application in a future public hearing.

16. The Commission expects OPG to:
    - work collaboratively with interested Williams Treaties First Nations to scope out the extent, timing and content of the following study and assessment:
        - Rights Impact Assessment
        - Indigenous Knowledge study
    - work collaboratively with Williams Treaties First Nations to scope out the extent, timing and content of an updated Cumulative Impacts Assessment
    - consider best practices and standards when scoping and undertaking the above-noted study and assessments
    - produce an up-to-date engagement report, to be filed on the record of the public hearing regarding the licence to construct (LTC) application, including status updates regarding progress in relation to the study and assessments
    - continue to develop and implement an EA follow-up and monitoring program, and incorporate, to the extent possible, engagement with the Williams Treaties First Nations and the Métis Nation of Ontario on applicable items (e.g., measures to offset the loss of bank swallows nesting habitat)

17. The Commission directs CNSC staff to:
    - support OPG's collaborative work on the following study and assessments:
        - Rights Impact Assessment
        - Indigenous Knowledge study
        - Cumulative Impacts Assessment
    - produce an up-to-date consultation report, to be filed on the record of the public hearing regarding the LTC application

18. The Commission expects both CNSC staff and OPG to continue their respective consultation and engagement activities with all identified[16] Indigenous Nations and communities and their representatives over the lifecycle of the DNNP and with respect to any subsequent applications to the Commission.

19. The Commission also recommends that in the OPG development and implementation of its EA follow-up program, OPG incorporate, to the extent possible, engagement with the Williams Treaties First Nations and the Métis Nation of Ontario on applicable items (e.g., measures to offset the loss of bank swallows nesting habitat), Indigenous Knowledge, and land use information and data in the program.

3.0 ISSUES AND COMMISSION FINDINGS

20. The Commission's analyses for its decision in this matter are set out within the following sections of this *Record of Decision*:

    - Section 3.1 Overview of the Darlington New Nuclear Project
    - Section 3.2 Summary of Views of Hearing Participants
    - Section 3.3 Applicability of EA to BWRX-300 Reactor Technology
    - Section 3.4 Indigenous Engagement and Consultation

3.1 Overview of the Darlington New Nuclear Project

3.1.1 *Project Description and History*

21. The DNNP is a proposed new nuclear build located on the existing Darlington Nuclear site, on the north shore of Lake Ontario, approximately 10 km east of Oshawa. The Darlington Nuclear site consists of the existing Darlington Nuclear Generating Station (NGS), which has 4 Canada Deuterium Uranium

[16] Identified Indigenous rights-holders refers to the Indigenous Nations and communities who have Indigenous and/or Treaty rights in the area where the DNNP is proposed or who have expressed an interest in the DNNP.

(CANDU) reactors, a tritium removal facility and a waste management facility. The eastern third of the overall Darlington Nuclear site was designated for the DNNP.

22. In September 2006, OPG submitted a preliminary application for a Licence to Prepare Site (LTPS) at the Darlington site, for up to 4 Class IA nuclear power reactors, with a combined net output of 4800 MW electrical (MWe). The CNSC established that it was an RA under CEAA 1992; other RAs are identified in section 3.1.4 of this *Record of Decision*. The OPG application did not identify a reactor technology, but used the PPE approach to describe the bounding features of the Project. Further information on the PPE approach is discussed in section 3.1.3 of this *Record of Decision*.

23. In August 2011, after the review of the evidence, including a public hearing with public participation, the JRP issued its report on the EA for the DNNP, stating its conclusions and recommendations regarding the environmental effects of the Project. Following the Government of Canada's response to the JRP recommendations in May 2012, the JRP, as a Panel of the Commission, issued OPG a 10-year LTPS for the DNNP. In October 2021, the Commission renewed the licence for a 10-year period.[17]

24. In December 2021, OPG selected the General Energy Hitachi (GEH) BWRX-300 reactor as the reactor technology for deployment at the DNNP. OPG submitted an application for an LTC to build one (1) BWRX-300 reactor. In October 2022, OPG submitted a revised PPE report[18,19] and a report documenting its review of the EIS for the BWRX-300,[20,21] for the Commission's consideration of whether the BWRX-300 is fundamentally different from the reactor technologies assessed in the DNNP EA.

3.1.2 *BWRX-300 Reactor Technology Description*

25. In section 1.5 of CMD 24-H2.1, OPG submitted that the BWRX-300 is a 10th generation boiling water reactor (BWR) designed by GEH, with a 300 MWe output, with a water-cooled natural circulation cycle. OPG noted that the

[17] CNSC Record of Decision, *Application to Renew the Power Reactor Site Preparation Licence for the Darlington New Nuclear Project,* October 12, 2021.
[18] OPG submission, *Use of Plant Parameters Envelope to Encompass the Reactor Designs being Considered for the Darlington Site*, N-REP-01200-10000, revision 5, October 5, 2022.
[19] OPG submission, *Use of Plant Parameters Envelope to Encompass the Reactor Designs being Considered for the Darlington Site*, N-PRE-02100-10000, revision 6, July 2023.
[20] OPG submission, *Darlington New Nuclear Project Report for the Review of the Environmental Impact Statement for Small Modular Reactor BWRX-300*, revision 0, NK054-REP-07730-00055, October 5, 2022.
[21] OPG report, *Darlington New Nuclear Project Environmental Impact Statement Review Report for Small Modular Reactor BWRX-300*, revision 1, NK054-REP-07730-00055, June 28, 2023.

passive safety systems of the BWRX-300 reactor design leverage the design and licensing basis of GEH's United States Nuclear Regulatory Commission (USNRC)-certified Economic Simplified Boiling Water Reactor (ESBWR).

26. In the EIS Review, section 3.1, OPG submitted that:

- the BRWX-300 belongs to the same light water reactor family as the pressurized water reactor that was included as one of the reactors assessed in the PPE for the EA (see below)
- the nuclear fuel contains uranium dioxide (UO_2), with similar U-235 enrichment, up to 5 weight percent (wt%), as the pressurized water reactor assessed in the EA
- light water is used as coolant and moderator
- the vertical arrangement of fuel assemblies in the core and the means of shutting down the nuclear reaction through the use of neutron absorbing control rods and injection of a liquid solution of boron are the same as the pressurized water reactor assessed in the EA
- the turbine-generator of the BWRX-300 is similar to the equipment used in a pressurized water reactor
- boiling water reactor technology was considered during the development of the EIS; however, insufficient information was submitted by the vendor for inclusion in developing the PPE

27. In section 3.2 of CMD 24-H2.1 and during its presentation, OPG noted that the BWRX-300 reactor is smaller in physical size, footprint and electrical power output than the reactor technologies that were assessed in the EIS.

3.1.3 *Overview of the Plant Parameter Envelope Approach*

28. At the time the EIS was prepared for the EA, the Province of Ontario had not yet selected a specific reactor technology for the new build. OPG prepared its EIS using a PPE approach, examining the potential environmental effects of several possible reactor technologies. The JRP EA Report, section 2.1, defined the plant parameter envelope as a "set of data derived from available vendor information for multiple reactor technologies", which "provides a bounding envelope of plant design and site parameter values for use in the Application for a Licence to Prepare Site and environmental assessment."[22] In section 2.1.1 of CMD 24-H2, CNSC staff noted that the PPE provides applicants performing early site characterization work with a framework to assess a site for a nuclear power plant and resolve site-specific environmental characteristics, without specifying a reactor technology. In section 2.1 of CMD 24-H2.1, OPG noted that the PPE approach is consistent with CNSC REGDOC 1.1.1, *Site Evaluation*

[22] JRP EA Report, *supra* note 4, section 2.1, page 11.

and Site Preparation for New Reactor Facilities, Section F.1[23] and noted also that it has been accepted and implemented internationally, in the United States.

29. In its written submission (CMD 24-H2.1, section 2.1), OPG submitted that the PPE for the DNNP was derived from vendor information for multiple reactor designs, by comparing parameters and choosing the limiting value. OPG added that, "while some of the parameters in the PPE could change as a result of technology choices or project developments, their overall significance from an EA perspective would be assessed by reviewing the potential environmental effects resulting from the change and determining whether the EIS conclusions remain valid."[24]

30. As noted in OPG's submission, at the early stages of the Project, in 2007, the PPE was first developed based on nine large reactor designs, including Atomic Energy of Canada Ltd.'s EC6 and ACR-1000, Areva's EPR, GE Hitachi's Advanced Boiling Water Reactor (ABWR) and Economic Simplified Boiling Water Reactor (ESBWR), Korea Hydro and Nuclear Power's OPR1000 and APR1400, Mitsubishi's US-APWR, and Westinghouse's AP-1000. In 2008, following a Request for Proposal by Infrastructure Ontario, the PPE was revised to reflect the bounding limits for the designs that participated in the process: the AP-1000, the EPR, and the ACR-1000. The PPE was revised in 2010 to include the EC6 reactor. The JRP EA Report, section 2.2, stated that OPG indicated that the

> "plant parameter envelope for the Project was sufficiently broad to include other alternative technologies that are commercially available that may be selected by the Government of Ontario, including boiling water reactors and the EC6 reactor technology. OPG was of the view that the conclusions of the environmental assessment would not change should an alternative reactor technology be selected.
> In consideration of the CNSC staff recommendation and the OPG response, the Panel directed OPG to provide a description of the elements of those technologies that could be outside the plant parameter envelope defined in the EIS. OPG was to provide details on how this could change the potential effects of the Project on components of the environment and any other aspects of the environmental assessment, and any required changes to the responses to information requests that OPG had already provided to the Panel.
> OPG responded to this request by providing an update to the plant parameter envelope and responses to information requests, taking the EC6 reactor technology into consideration. Following further requests for information from the Panel, a revised version of the plant parameter envelope was submitted by OPG on November 30, 2010. OPG noted

[23] CNSC Regulatory Document, REGDOC-1.1.1, *Site evaluation and Site Preparation for New Reactor Facilities*, Version 1.2, July 2022.
[24] OPG submission, CMD 24-H2.1 , section 2.1, page 12.

> that a similar assessment was not performed for a boiling water reactor as insufficient information was available to allow OPG to do so. OPG noted that should the Government of Ontario decide to include boiling water-type reactors in its procurement process, the plant parameter envelope would be updated accordingly."[25]

During the current hearing, OPG informed the Commission that it followed the same process for the BWRX-300, that is, update the PPE and review and revise the EIS, as it had done for the EC6 reactor.

31. The Commission notes that the validity of conducting the EA on a PPE basis has been upheld and is not in question at this time. The use of the PPE approach to the EA for the DNNP was one aspect of the litigation that was initiated by a number of environmental groups, including Greenpeace and the Canadian Environmental Law Association (CELA), through an application for judicial review of the conduct of the EA and the issuance of the LTPS. The applicants submitted to the Federal Court of Canada (FC)[26] that the Panel had failed to assess a "project" within the meaning of CEAA because no specific reactor technology had been selected, and failed to assess the factors that it was required to assess. The decision of the FC was appealed to the Federal Court of Appeal (FCA).

32. According to the decision of the FCA, the PPE approach "involved identification of the significant design elements of the project and, for each of those elements, an assessment of adverse environmental effects based on each of the design options under consideration. Consequently, a composite picture of the maximum expected environmental impact was established. Ultimately, the bounding approach for the Project encompassed four different technology options."[27]

33. The FCA recognized future regulatory action would require a greater level of detail, and that the follow-up program central to the EA process is meant to adapt to both changes and to the specificity that comes from greater detail as plans are made more concrete over time. [28] The FCA upheld the work of the JRP and the EA, as well as the issuance of the LTPS.[29] The Appeal Court ruled that an EA could be conducted, and the LTPS issued, on a PPE basis without a specific chosen technology. Leave to appeal to the Supreme Court of Canada (SCC) was sought by Greenpeace but the application was dismissed.[30]

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[25] JRP EA Report, *supra* note 4, section 2.2, page 12.
[26] *Greenpeace et al. v. OPG et al.*, 2014 FC 463.
[27] *OPG v. Greenpeace*, 2015 FCA 186, at para 17.
[28] *Ibid*., at para 141, citing para 11 of the JRP EA Report, *supra* note 4.
[29] *OPG v. Greenpeace et al.*, *supra* note 27.
[30] *Greenpeace et al. v. OPG et al.*, 2016 SCC 36711.

3.1.4 *Other Federal Regulatory Authorizations*

34. As required by the Government Response to the EA Report, CNSC staff sought review and advice from other RAs. In section 2.2.3 of CMD 24-H2, CNSC staff described the assessment by and conclusions of the two other RAs for the DNNP – Transport Canada and Fisheries and Oceans Canada – regarding the applicability of the EA to the chosen reactor technology.

35. In section 2.2.3.1 of CMD 24-H2, CNSC staff submitted that under the *Canadian Navigable Waters Act*[31] and the *Vessel Operation Restriction Regulations*,[32] Transport Canada is considered the RA for the DNNP in respect of:

- shoreline protection works
- construction of the intake, outfall, and diffuser system
- infilling of Lake Ontario

As reported by CNSC staff in section 2.2.3.1 of CMD 24-H2, Transport Canada determined that, within its areas of responsibility and authority, OPG's selection of the BWRX-300 reactor technology does not introduce a fundamental difference that would affect its consideration of the EA.

36. In section 2.2.3.2 of CMD 24-H2, CNSC staff submitted that under the *Fisheries Act*,[33] Fisheries and Oceans Canada is the RA responsible for:

- shoreline protection works affecting aquatic habitat and species
- construction of intake, outfall, and diffuser system as it affects aquatic habitat and species
- infilling of 0.40 km^2 (40 hectares) of Lake Ontario affecting aquatic habitat and species

As reported by CNSC staff in section 2.2.3.2 of CMD 24-H2, Fisheries and Oceans Canada determined that, within its areas of responsibility and authority, OPG's selection of the BWRX-300 reactor technology does not introduce a fundamental difference that would affect its consideration of the EA.

[31] Revised Statutes of Canada (R.S.C.) 1985, C. N-22.
[32] SOR/2008-120. Note: CMD 24-H2, section 2.2.3.1 refers to it as "Vehicle Operation Restriction Regulations".
[33] R.S.C. 1985, c. F-14.

3.2 Summary of Views of Hearing Participants

37. In order to determinate whether the BWRX-300 reactor technology is fundamentally different from the reactor technologies covered by the EA and whether a new EA is required, the Commission gave careful consideration to all submissions and perspectives received, in accordance with its mandate and the scope of this hearing. The Commission appreciates the efforts and contributions of all hearing participants.

38. In section 6 of CMD 24-H2.1, OPG submitted that its comprehensive review of the PPE and EIS had concluded the following based on its rationale:

- The BWRX-300 design was within the established PPE for the majority of the 198 individual parameters. For the 8 parameters where the BWRX-300 was determined to be outside the PPE, the PPE was updated to encompass the BWRX-300 specific data, and the revised parameters were then assessed, and shown to be bounded by the conclusions of the EA.
- For the EIS Review, the fundamental elements of the EIS were compared to those resulting from deployment of 4 BWRX-300 reactors at the DNNP site. The EIS Review determined that the conclusions of the 2009 EIS remain valid for the deployment of the BWRX-300 reactor design, and that "the DNNP will not result in any significant adverse environmental effects provided the mitigation measures are implemented."[34]

Based on these assessments, OPG concluded that the BWRX-300 proposed reactor technology is not fundamentally different from the reactor technologies assessed under the DNNP EA.

39. In section 4 of CMD 24-H2, CNSC staff submitted that the "majority of parameters assessed in the EIS Review fall within the scope of the impacts assessed and accepted in the EA, or are not applicable due either to the design of the BWRX-300 reactor or OPG's approach to the design."[35] CNSC staff further concluded that, for the 8 parameters outside the bounding scenario, OPG had adequately assessed these parameters and the mitigation measures identified in the EA are adequate to show that these parameters remain bounded by the conclusions of the EA.

[34] OPG submission, CMD 24-H2.1, section 6, page 34.
[35] CNSC staff submission, CMD 24-H2, section 4, pages 81-82.

40. Intervenors expressed views on the following:

- the validity of the DNNP EA considering changes in standards, codes, and regulations (e.g., *National Building Code of Canada*,[36] *Fire Code*[37]) and the applicability of the EA to the BWRX-300 reactor technology
- the design differences between the BWRX-300 and the reactor technologies assessed in the EA, such as:
  - foundation depth
  - airborne radioactive emissions to the atmosphere
  - spent fuel cask weight
  - the importance factor of wind load
  - differences in fuel types from CANDU reactors
  - volumetric activity of solid radioactive waste
  - minimum airborne effluent release height
  - fire protection – water withdrawal rate and quantity of water stored in the water supply system
- potential impacts of the BWRX-300 on species at risk
- effects of accidents and malfunctions
- impact of climate change on the Project
- potential cumulative effects of the Project
- the consideration of cumulative impacts on Aboriginal or treaty rights
- the consideration of cumulative effects assessments, Indigenous Knowledge studies and traditional land use studies
- the assessment of the DNNP on impacts to Aboriginal or treaty rights

41. Several intervenors, including the Durham Nuclear Awareness, the Slovenian Home Association and the Canadian Environmental Law Association (CMD 24-H2.8, CMD 24-H2.8A), Susan O'Donnell (CMD 24-H2.9), Sarah Gabrielle Baron (CMD 24-H2.10), Dale Dewar (CMD 24-H2.11), Ann McAllister (CMD 24-H2.19), John J Jacobs (CMD 24-H2.20), Bill Noll (CMD 24-H2.28, CMD 24-H2.28A), Cathy Vakil (CMD 24-H2.29), Concerned Citizens of Renfrew County and Area (CMD 24-H2.30), Northwatch (CMD 24-H2.32, CMD 24-H2.32A), Gordon Edwards (CMD 24-H2.33), Nuclear Transparency Project (CMD 24-H2.35), Evelyn Gigantes (CMD 24-H2.36), Simon J Daigle (CMD 24-H2.37), and Dennis LeNeveu (CMD 24-H2.38), commented that the selected BWRX-300 was a "fundamentally different" reactor design from those contemplated in the EA. The arguments submitted included:

- BRWX-300 is a novel reactor technology, that is not currently in operation
- the reactor type, a boiling water reactor, was not one of the four reactor technologies assessed in the EA

[36] Canadian Standard, *National Building Code of Canada*, 2020 edition.
[37] O. Reg. 213/07: Fire Code.

- the reactor embedment is significantly deeper than the four reactor technologies assessed in the EA
- different emissions to air, emission release height and thermal emissions
- the fuel design is different from the four reactor technologies assessed in the EA
- fundamental differences in radioactive waste inventories and weight of the spent fuel cask
- lack of information and analysis on effects of multi-unit accidents

42. The issues raised by hearing participants, and their bearing on the deliberations of the Commission, are discussed in the appropriate subject-specific sections of this *Record of Decision*. Issues raised by Indigenous Nations and communities are detailed in section 3.4 of this *Record of Decision*.

3.2.1 *Applicability of the Impact Assessment Act*

43. Several intervenors, including the Saugeen Ojibway Nation (CMD 24-H2.22), the Hiawatha First Nation (CMD 24-H2.23, CMD 24-H2.23A), Curve Lake First Nation (CLFN, CMD 24-H2.25, CMD 24-H2.25A), the Mississaugas of Scugog Island First Nation (MSIFN, CMD 24-H2.26, CMD 24-H2.26A) and the Nuclear Transparency Project (CMD 24-H2.35), expressed concerns regarding what they see as gaps between CEAA, 1992 and the assessment legislation in place today, the *Impact Assessment Act*[38] (IAA), given the relatively broader scope of the IAA. Under the IAA, new and different kinds of impacts must be assessed as compared to what was required under CEAA 1992, including additional steps to assess the environmental, social, health, economic, and cultural impacts of major projects, and the effects of projects on Indigenous peoples and their rights.

44. The Commission notes that the EA that was conducted under CEAA 1992 remains valid. This is so regardless the age of the EA, and the changes to the environment, society, and legislation, that have occurred since the JRP issued its 2011 report. The Commission further notes that the follow-up and mitigation aspects of the EA process are meant to provide mechanisms for adapting over time to address both internal and external changes.[39]

3.3 Applicability of EA to BWRX-300 Reactor Technology

45. The Government Response mandated that the Commission determine whether any future proposal by the proponent is "fundamentally different" from the specific reactor technologies assessed by the JRP. "Fundamentally different" is

[38] S.C. 2019, c. 28, s. 1.
[39] *OPG v. Greenpeace*, *supra* note 28.

not a defined term in statute, and there is no list of factors set out in legislation or the Government Response to guide the understanding of its meaning.

46. The Commission looks to the plain and ordinary meaning of the terms "fundamental" and "difference" and the context in which those words are being used. The words read together as a phrase suggest that to be a fundamental difference, the difference must be regarding something essential or basic. [40] The Commission is also guided by the EA Report, which noted that, "if the Project is to go forward, the reactor technology selected by the Government of Ontario must be demonstrated to conform to the plant parameter envelope and regulatory requirements, and must be consistent with the assumptions, conclusions and recommendations of the environmental assessment and the details of the Government response to this Joint Review Panel Environmental Assessment Report."[41]

47. The Commission takes the view that the determination to be made is largely a technical one. The Commission considered the BWRX-300 reactor technology and the reactor technologies covered by the EA, assessing the technologies and the nature of the differences between them. The Commission also considered the PPE and regulatory requirements, how OPG assessed that the BWRX-300 reactor technology impacted the PPE bounding scenarios, and if the chosen reactor technology is consistent with the assumptions, conclusions, and recommendations of the EA.

48. In evaluating whether the BWRX-300 reactor technology is fundamentally different from those assessed in the EA, the Commission considered OPG's EIS Review report, the revised PPE document, and the characteristics of the chosen reactor technology with respect to the technologies assessed in the EA. The Commission also considered whether and how the predictions of the DNNP EA apply to the BWRX-300. Details of key design elements and the Commission's determination are summarized in this *Record of Decision*.

[40] The Oxford English Dictionary does not define the phrase, but the words on their own are defined as follows, suggesting that, to be a fundamental difference, the difference must be regarding something essential or basic: *Fundamentally*, adv. "In fundamental or essential matters or points; as regards fundamentals; essentially." *Fundamental,* adj. & n. "Serving as a basis or foundation; (hence) forming an essential or indispensable part of a system, institution, etc." *Different*, adj., n., & adv. **"**Unlike in nature, form, or quality; not of the same kind; dissimilar." (Retrieved online at https://www.oed.com).
[41] JRP EA Report, *supra* note 4.

3.3.1 *BWRX-300 Reactor Design Comparison to Reactor Technologies in the EA*

49. In Table 1, section 3.1 of the EIS Review report, OPG compared the main reactor BWRX-300 reactor design parameters with those considered in the EA Report. The differences included:

- boiling water reactor design (BWRX-300), compared to pressurized light water reactors or pressurized light and heavy water reactor designs considered in the EA Report
- deeper embedment (BWRX-300), compared to the reactor designs considered in the EA Report
- fuel assembly design (BWRX-300 uses the GNF2 fuel assembly), compared to the fuel assemblies used by the reactor designs considered in the EA Report
- no secondary cooling system for the BWRX-300, since the primary and secondary cooling systems are combined in a single circuit, such that the heat produced by nuclear fission in the core heats up the surrounding cooling water, creating steam, which is directly used to drive a turbine
- the emergency cooling system for the BWRX-300 uses a Passive Isolation Condenser system

Discussion

50. The Commission asked for further information on the BWRX-300 reactor design. A representative from OPG noted that the "X" in BWRX represents the fact that it is a 10th generation boiling water reactor (BWR), and the majority of the features of this design are well-established, proven and in operation in existing BWRs internationally. The OPG representative added that the BWRX-300 includes a number of design features that improve its safety, including passive safety features that allow for an extended coping time[42] with minimal operator action and without the need for offsite power, and is smaller in size compared to existing BWRs. The OPG representative also noted that the reduced size would result in a reduced footprint and a smaller impact on the environment.

51. Asked to describe the reasons for selecting this particular reactor design, an OPG representative noted that the selection considerations included:

- safety case
- "deployability" of the design
- maturity of the design
- reactor size

[42] Coping time is defined as the time lapse between departure from normal operation and the moment at which significant loss of geometry of the fuel assemblies occurs, such that the reactor core can no longer be cooled.

- proven reactor technology
- domestic supply chain availability
- proven fuel design

52. The Commission asked CNSC staff to comment on the regulatory review process it followed to evaluate the reactor technology. CNSC staff responded that it uses a process that is not technology-specific to determine whether a specific reactor technology is safe and that the health and safety of people and the environment is maintained. CNSC staff also noted that, as a lifecycle regulator, requirements such as environmental monitoring and a follow-up monitoring program would become part of the licence conditions to which licensees shall adhere to, and that the CNSC has mechanisms to validate and verify the effectiveness of mitigation measures implemented by licensees.

53. The Commission asked for further information on the fuel type and fuel waste characteristics. CNSC staff noted that the fuel is UO_2-based fuel, similar in design to fuel used in other operating BWRs. CNSC staff further explained that while the solid radioactive waste from the BWRX-300 presents differences in characteristics from the other technologies assessed in the EA, such as higher activities of certain isotopes, the overall activity for the BWRX-300 spent fuel is less. CNSC staff added that the dose assessment determined that there were no impacts on the overall conclusions of the EIS as a result of the differences. CNSC staff further stated that there are no changes to the waste management strategy and the regulatory requirements that apply to the BWRX-300 fuel, as compared to the reactor technologies assessed in the EA. An OPG representative concurred with CNSC staff's response, noting that the two pressurized water reactors assessed in the EA also use up to 5 wt% enriched fuel, which is consistent with the fuel used by the BWRX-300 reactor type.[43]

54. On the topic of waste, the Commission asked OPG to comment on how low- and intermediate-level waste produced by the BWRX-300 would differ from wastes that are produced by existing reactor technologies in Canada and how the management of all waste types from BWRX-300 might differ from that assessed in the EA. An OPG representative explained that the waste characteristics would be similar; however, the volume of low-level and intermediate-level waste would be less than what was assessed as part of the EA. The OPG representative further noted that OPG has processes in place to reduce and eliminate the amount of waste created; however, for the bounding scenarios in the EA, OPG did not factor those processes in. The OPG representative also explained that in terms of fuel handling and management, the practices required for the BWRX-300 fuel would be similar to other BWRs and the pressurized water reactors that were considered in the EA.

[43] Transcript, January 23, 2024, page 185.

55. The Commission asked OPG about the impact of outsourcing the manufacture of the reactor fuel outside of Canada in terms of supply chain and impact on the environment. A representative from OPG reiterated that the fuel used by the BWRX-300 is a proven fuel design, which is in use in various BWRs internationally, and that its qualification is subject to regulatory requirements. The OPG representative explained that the fuel would be transported to the DNNP site under CNSC regulatory requirements, using a CNSC and USNRC-certified transportation package and a pre-approved transportation route. The OPG representative further stated that supply chain security was one of the considerations taken into account during the technology selection process, and that OPG does not anticipate any issues with acquiring the reactor fuel. The OPG representative noted that OPG had already entered into agreements with respect to the supply chain for the fuel.

56. Regarding the spent fuel for the BWRX-300, OPG submitted that both the activity and the volume of wastes are less than the corresponding values assessed as part of the EA, primarily due to the smaller reactor size. OPG added that the nuclear industry has significant operating experience on safely handling enriched fuel, including in Canada at Chalk River Laboratories, and internationally in the United States and other countries with operating reactors that use enriched fuel. OPG noted that it was working with the Tennessee Valley Authority utility in the United States to gather BWR operating experience. In terms of handling and shielding requirements, the OPG representative commented that these requirements would be comparable to any other boiling water reactor currently in operation. The OPG representative added that OPG continuously looks at ways to implement process improvements in keeping with the as low as reasonably achievable (ALARA) principle. CNSC staff concurred that, for the BWRX-300 reactor type, the spent fuel activity would be comparable to that of other pressurized water reactors and boiling water reactors, such as the AP-1000, which was part of the PPE for the EA.

57. Several intervenors raised that a fundamental difference of the BWRX-300 from the reactors assessed in the EA was the lack of a secondary cooling loop.[44] An OPG representative noted that the EIS Review confirmed that the environmental impacts of the BWRX-300, a single-loop reactor design, are bounded by the conclusions of the EA. In section 3.6.1 of the EIS Review report, OPG explains that the BWRX-300 description in terms of the reactor coolant system is similar to that in the EIS document used for the EA: “The cooling of the fuel is consistent. For the reactors assessed in the EIS, the EIS

[44] In a pressurized water reactor, the coolant is maintained at a high pressure to prevent boiling. After passing through the reactor core, the coolant is pumped through the primary tube side of the steam generator and return to the reactor core, which is referred to as the primary loop. The water flowing through a steam generator boils water on the shell side, which is kept at a lower pressure than the primary loop side, to produce steam. The shell side is referred to as the secondary loop. The secondary side steam is then delivered to the turbines to make electricity.

assumed that the heated reactor coolant water enters the tubes of the steam generators, resulting in boiling of the feedwater on the shell side of the steam generators. In the BWRX-300, the heated reactor coolant turns directly into steam."[45] The OPG representative further explained that there are advantages of having a single loop, such as easier maintainability due to the lack of boilers. CNSC staff added that the CNSC's regulatory framework does not prescribe a secondary cooling loop design feature, and noted that it assesses the safety of a reactor design based on its systems and components during normal operations and accident scenarios.

58. In its intervention, Northwatch (CMD 24-H2.32, CMD 24-H2.32A) raised a concern that the smaller spent fuel pools for the BWRX-300 would necessitate an earlier transfer of spent fuel from wet to dry storage which would result in higher dose consequences for workers and the public. The Commission asked OPG to comment on the potential effects associated with the smaller spent fuel pool design. A representative from OPG noted that OPG's current strategy assumes that spent fuel remains in the pools for approximately 8 years, after which it is transferred to dry storage containers for interim storage. OPG explained that it assessed this strategy against its current practices and concluded that the mitigation measures needed to address this change are limited to changes to operating procedures for workers. From a radiation dose perspective, the OPG representative submitted that the doses to workers and the public as a result of moving the spent fuel every 8 years instead of 10 years would still remain within the regulatory dose limits.[46]

59. Based on the information on record, the Commission concludes that the differences in reactor technology between the BWRX-300 and the reactor designs covered by the EA are not substantial. The Commission finds that:

- despite the differences in the fuel assembly design, the fuel characteristics are similar to those of the reactors covered by the EA
- the fuel assembly design is not novel, as it is currently in use in other reactors internationally
- the use of single-loop reactor design does not introduce new environmental effects and is bounded by the conclusions of the EA

3.3.2 Plant Parameter Envelope Report Update

60. The PPE consists of 198 parameters. During the hearing, OPG explained that 194 of these parameters were based on guidance from the Nuclear Energy Institute, are technology-neutral, and provide a representation of the plant and

[45] OPG EIS Review, *supra* note 20, section 3.6.1, Table 3: *Comparison of How Energy is Produced*.
[46] The regulatory dose limits for workers and the public are established in the *Radiation Protection Regulations*, i.e., 50 mSv in one year dosimetry period for a nuclear energy worker and 1 mSv in one calendar year for a person who is not a nuclear energy worker.

the technologies assessed. OPG further explained that, even though there are interdependencies between some of the parameters, the PPE assumes the limiting value from all technologies considered, and thus the results would be bounding to all technologies. As per its commitment to the JRP, OPG reviewed the design of the BWRX-300 against the PPE and submitted in section 2.2 of CMD 24-H2.1 that:

- 60 of the 198 parameters are not applicable, as they are related to equipment that would not be deployed for the BWRX-300 reactor
- 130 of the 198 parameters are bounded by the PPE values, such as site water level, soil properties, and once-through cooling design parameters
- 8 of the 198 parameters are outside the bounds of the original PPE; these parameters are further discussed in sections 3.3.2.1.1 to 3.3.2.1.8 of this *Record of Decision*

61. In its submission, CNSC staff (CMD 24-H2, section 2.1.1) submitted that it reviewed OPG's PPE document and EIS Review report and all 198 parameters and concurred with OPG's conclusions. CNSC staff noted that of the 60 parameters that are no longer applicable:

- 34 parameters relate to the use of cooling towers for the normal plant heat sink, which is not part of the design since the BWRX-300 proposes once-through cooling
- 4 parameters relate to the use of auxiliary boilers as a backup heat sink, which is no longer part of the design since the BWRX-300 proposes standby or emergency generators instead of deploying auxiliary boilers
- 22 parameters relate to the plant's ultimate heat sink, heat exchanger and cooling towers, which are no longer part of the design since the BWRX-300 proposes an Isolation Condenser System (ICS) as an ultimate heat sink, in which the ICS water is allowed to boil and the steam is vented to the atmosphere

62. CNSC staff explained that, as part of its review process, it evaluated:

- each individual parameter to determine if it was outside the bounds of the PPE or if additional mitigation measures would be required
- the aggregate of all the changes and how these changes impacted the PPE, EIS and EA conclusions

Discussion

63. Asked to comment on the ability of the PPE to capture the aspects needed to determine the applicability of the EA to the BWRX-300 reactor technology, CNSC staff clarified that both the PPE and EIS Review documents were required in order to determine if the EA predictions and conclusions remained valid. CNSC staff reiterated that the PPE provides a set of bounding values that are used to determine the bounding impact on the environment, while making

conservative assumptions regarding each parameter. An OPG representative added that a PPE is an industry-wide developed set of parameters which is technology independent. OPG reiterated that, through its comprehensive review process, it was able to demonstrate that, taking into consideration the mitigation measures that OPG has committed to have in place, the EA fully covers the BWRX-300 reactor technology.

64. The Commission asked OPG for more information on how the safety and control measures for the BWRX-300 fuel were captured in the revised PPE and EIS Review documents. A representative from OPG noted that the BWRX-300 fuel type is a proven technology that has been qualified and is currently in use in other BWRs internationally. The representative noted that OPG was undergoing the qualification process for this fuel type following CNSC requirements. The OPG representative noted that additional safety controls such as the use of neutron absorbers in the rack design were assessed to be within the bounds of the EA.

3.3.2.1 Parameters Outside the Bounds of the Original PPE

65. OPG determined that 8 of 198 parameters for the BWRX-300 reactor design were outside the PPE assessed in the EA. OPG revised the PPE to encompass the BWRX-300 specific data and assessed the revised parameters as part of the EIS Review. This section summarizes the Commission's findings for each parameter.

3.3.2.1.1 Fire Protection, short-term withdrawal rate from the water source

66. In section 2.3 of CMD 24-H2.1, OPG submitted that the BWRX-300 has a higher short-term withdrawal rate from the fire protection water source than what was assessed in the EA. OPG added that the average total water for the potable water and sanitary waste system, demineralized water system and fire protection system combined would be less than previously assessed, and less wastewater would be discharged to the municipal system than assessed in the EIS. Based on its analysis of the changes in the short-term withdrawal rate from the water source for the BWRX-300, OPG determined that the conclusions of the EA remain bounding.

67. In section 2.1.2.1, Table 1 of CMD 24-H2, CNSC staff reported that the short-term withdrawal rate for 4 BWRX-300 reactors is 508 liters per second (L/s),[47] compared to the value assessed in the EA (158 L/s). CNSC staff further

[47] Value originally reported in OPG report, Use of PPE, *supra* note 18, Section B.1.4, Table 4: Consolidated PPE Parameters, Values, Where Used and How Used, ID no. 7.1.1, Raw Water Requirements, Maximum Use.

reported that the demineralised water system and the potable water/sanitary waste system were assessed to be 34 L/s and 4.38 L/s, respectively, which would be at least 4 times lower than the corresponding EA parameter values (i.e., 136 L/s and 17.5 L/s respectively). CNCS staff submitted that it reviewed OPG's submission as it relates to fire water and concurred with OPG's assessment that this parameter does not impact the conclusions of the EA.

Discussion

68. Asked to comment on the short-term withdrawal rate, an OPG representative noted that this represented the maximum rate of withdrawal from the water source for the fire protection water system. The OPG representative noted that the water inventory used for this purpose would be maintained on-site in holding tanks and that the Ontario *Fire Code*[48] and CSA N293, *Fire Protection for Nuclear Power Plants*[49] provide the requirements for the amount of inventory and the withdrawal rate. Further information on the fire water inventory is provided in section 3.3.2.1.2 of this *Record of Decision*.

69. Based on the information on record, the Commission concludes that the EA remains bounding, when considering the impact of the short-term withdrawal rate parameter being outside the bounds of the original PPE. The Commission finds that:

- although the short-term withdrawal rate for fire water is higher for the BWRX-300, the total water withdrawal is lower than what was assessed in the EA
- the water inventory required for fire protection will be maintained on-site in holding tanks
- the effects on Municipal infrastructure and services of the overall water usage and discharge are less than what was assessed in the EA
- the EA is bounding for the effects of the change in the short-term withdrawal rate for the fire protection system

3.3.2.1.2 Fire Protection, quantity of water stored

70. In section 2.3 of CMD 24-H2.1, OPG submitted that the BWRX-300 requirements for stored water are greater than what was considered in the original PPE; however, the fire water storage requirements are reported for information purposes only and do not factor into the EIS calculations. As such, OPG reported that there was no impact on the EA conclusions. In section 2.1.2.1, Table 1 of CMD 24-H2, CNSC staff noted that the total quantity of

[48] Fire Code, *supra* note 37.
[49] Canadian Standards Association, CSA N293-12, *Fire Protection for Nuclear Power Plants*, 2022.

water stored for 4 BWRX-300 reactors is 4.0×10^6 L, compared to 2.93×10^6 L used in the EA. CNSC staff submitted that it reviewed OPG's submission as it relates to fire water and concurred with OPG's assessment of the effects of this parameter.

Discussion

71. Asked for additional information on the water storage requirements for the revised PPE, an OPG representative explained that the increased quantity of water in the revised PPE was a result of changes in the Ontario *Fire Code* and CSA N293, and OPG's commitment to applying current requirements. The OPG representative noted that the change in quantity of water was independent of the selected reactor type, and that the water would be clean, treated water for the purpose of fire suppression. CNSC staff added that the *Fire Code* accounts for redundancy in the system, thus resulting in a high volume of water being stored for fire protection purposes.

72. Based on the information on the record, the Commission concludes that the EA remains bounding, when considering the impact of the quantity of water stored for fire protection being outside the bounds of the original PPE. The Commission finds that:

- the increased quantity of water in the revised PPE is a result of changes in Canadian *Fire Code*, and reflects current, updated standards
- the increased quantity of water is independent of the reactor technology and is not a result of the selected technology
- the quantity of water would be clean, treated water stored in stand-alone containers on the DNNP site
- the increase in quantity of water stored does not introduce new environmental effects that cannot be mitigated

3.3.2.1.3 Importance Factor for Wind Load

73. In section 2.3 of CMD 24-H2.1, OPG submitted that the importance factor for wind load[50] changed from the PPE value of 1.15 to 1.0.[51] OPG noted that the importance factor is a design requirement based on the design code,[52] rather

[50] The definition of the importance factor for wind load is provided in the PPE report, section B.1.1, Table 1 *PPE Parameter Characteristics*, parameter 1.7.2. The importance factor for wind load is defined as a "multiplication factor (as defined in [American National Standards Institute] ANSI [Standard] A58 1-1982 [*Minimum Design Loads for Buildings and Other Structures*]) applied to the basic wind speed to develop the plant design."
[51] The details of the changes in importance factor for wind load values are found in OPG EIS Review, *supra* note 20, section 4.1.5, page 32.
[52] American Society of Civil Engineers (ASCE) Standard, *Minimum Design Loads for Buildings and Other Structures*, ASCE/SEI 7-16, 2017.

than a site characteristic, and that the wind speed multiplication factor used for the BWRX-300 design was aligned with the updated methodology for calculating wind loading. OPG determined that the change in importance factor for wind load is bound by the conclusions of the EA, as the same strength targets met using the old methodology are also met using the updated methodology.

74. In section 2.1.2.5 of CMD 24-H2, CNSC staff provided information on its assessment of OPG's submissions related to the importance factor for wind load. CNSC staff submitted that it concurred with OPG that the change in importance factors did not introduce any new environmental effects. CNSC staff noted that further verification would be required at future stages of the Project to confirm that the DNNP design included wind loads that representative for wind load values determined as per the *National Building Code of Canada* (NBCC).[53]

Discussion

75. The Commission asked OPG to address the apparent reduction in conservatism in the design due to the reduction of the importance factor for wind loads from 1.15 to 1.0. A representative from OPG responded that OPG had compared the wind load calculated for the BWRX-300 reactor to the previous PPE wind load value and the NBCC value, and determined that the BWRX-300 wind load value was conservative. A representative from OPG noted that the value used in the PPE for the EA was defined based on a standard that became obsolete, and that when the Nuclear Energy Institute revised its guidance on PPEs, it removed the importance factor as a parameter of interest. The OPG representative added that the updated methodology used wind maps and the wind load was determined directly from the wind map, without the use of an importance factor.

76. The Commission asked if the importance factor for wind loads was dependent on the building type and shape. CNSC staff explained that the importance factor was not specific to the building type or shape, but that it was a general factor for the generation of the wind loads, and that it came from the NBCC. CNSC staff noted that OPG had chosen a different methodology to assess wind loading, which no longer required the use of the importance factor.

77. Based on the information on the record, the Commission concludes that the EA remains bounding, when considering the impact of the importance factor for wind load being outside the bounds of the original PPE. The Commission finds that:

- the change in importance factor is independent of the reactor technology

[53] National Building Code, *supra* note 36.

- the selection of an importance factor of 1.0 is consistent with the target strength described in the PPE for the EA thus there are no new environmental effects that cannot be mitigated

3.3.2.1.4 Reactor Embedment

78. In section 2.3 of CMD 24-H2.1, OPG submitted that the depth of embedment for the BWRX-300 reactor technology would be deeper than that assessed in the EA: 38 m for the BWRX-300 vs. 13.5 m assessed in the EIS.[54] OPG determined that the environmental effects of the greater depth of the BWRX-300 were bounded by the EA. OPG explained that the BWRX-300 would have a temporary impact on groundwater flows during construction, due to dewatering activities, rather than impacts due to permanent dewatering, which was assessed in the EA. OPG added that permanent dewatering would not be required for the BWRX-300 because of the planned installation of a waterproof foundation. As a result, groundwater levels would be allowed to return to normal post-construction levels. OPG noted that other effects related to the deeper embedment, including quantity of soil and rock removal, air quality, blasting and ground vibrations, sound level, stormwater and liquid effluents from dewatering operations were consistent with those evaluated in the EA.

79. In section 2.1.2.2 of CMD 24-H2, CNSC staff submitted its assessment of the impacts of the deeper embedment with respect to various environmental components, including:

- groundwater flow and quality
- soil quality
- construction-related dewatering
- noise due to excavation and blasting
- volume of soil and rock removal
- air quality
- blasting and ground vibration

CNSC staff further submitted that the EA is bounding for the deeper reactor embedment. CNSC staff determined that, although groundwater flow effects existed due to dewatering to a deeper foundation depth than what was assessed in the EA, the effects would be appropriately mitigated by mitigation measures already identified in the EA.

80. During the hearing, OPG noted that, with respect to the safety functions of the reactor building, deeply embedding the reactor structure would provide improved robustness in terms of withstanding certain events.[55] CNSC staff

[54] OPG EIS Review, *supra* note 20, Table 1, page 10.
[55] Transcript, January 24, 2024, page 90.

explained that CNSC's regulatory framework does not prescribe what the depth of a reactor embedment should be.[56]

Discussion

81. Several intervenors expressed concerns regarding the reactor embedment depth including the Society of United Professionals (CMD 24-H2.6), Ann McAllister (CMD 24-H2.19), Bill Noll (CMD 24-H2.28, CMD 24-H2.28A), Cathy Vakil (CMD 24-H2.29), Concerned Citizens of Renfrew County (CMD 24-H2.30), Gordon Edwards (CMD 24-H2.33), Northwatch (CMD 24-H2.32, CMD 24-H2.32A), and Nuclear Transparency Program (CMD 24-H2.35). The Commission asked OPG to discuss the process it used to assess the environmental effects associated with the deeper embedment. An OPG representative noted that the primary concern from an environmental perspective was the effect on the groundwater flow. The OPG representative explained that OPG performed 3-dimensional groundwater flow modelling to investigate the effects of the greater excavation depth. The OPG representative noted that the results showed a temporary impact during the construction phase due to dewatering requirements, however, unlike what was assessed in the EA, there would not be a permanent impact since groundwater levels would be allowed to return to their pre-construction levels.

82. Regarding the difference in total volume required to be excavated for four BWRX-300 reactors, the OPG representative noted that the overall volume of the embedment was significantly less (3.3 million cubic meters (m^3)) than what was assessed in the EA (12.4 m^3). CNSC staff summarized the conclusions of the its review with respect to the various environmental components and noted that the bedrock featured at the DNNP site has a high strength and bearing capacity and low permeability, thus making it very stable.

83. The Commission enquired about the potential for liquefaction and impacts from explosive blasts required for the deeper embedment. CNSC staff explained that the DNNP site was located in the Great Lakes Region of Canada, and the Great Lakes are on the edge of the Canadian Shield, a geologically stable mid-continental region, with low to moderate seismic hazard. CNSC staff noted that, as required, OPG conducted a detailed site geotechnical investigation and a site-specific hazard assessment in accordance with REGDOC-2.5.2, *Design of Reactor Facilities*,[57] and CSA N289.1, *General requirements for seismic design and qualification of nuclear power plants*.[58] CNSC staff added that OPG also evaluated the seismically induced liquefaction hazard under both the design-

[56] Transcript, January 24, 2024, page 91.
[57] CNSC Regulatory Document, REGDOC-2.5.2, *Design of Reactor Facilities*, Version 2.1, May 2023.
[58] CSA N289.1:23, *General Requirements for seismic design and qualification of nuclear power plants*, 2023.

basis earthquake[59] and beyond design basis earthquake[60] and concluded that the top 5 m to 7 m of soil would liquify under both conditions. CNSC staff noted that as a result of this assessment, OPG would put in place mitigation measures such as soil replacement with non-liquifiable engineered backfills, to prevent liquefaction during these conditions. CNSC staff confirmed that these findings and the mitigation measures were bounded by the conclusions of the EA.

84. Asked if any residual impacts of the deeper embedment would persist beyond the pre-construction phase, an OPG representative noted that OPG carried out modelling to assess impacts on the potential on-site habitats that may be retained as a result of the smaller reactor footprint. The OPG representative noted that the assessment showed that any minor impacts that may occur would be less than if the habitats were removed, which was the condition assessed in the EIS. The OPG representative explained that during construction activities, groundwater monitoring would be in place to monitor changes to groundwater flow and to confirm the predictions of the modelling assessment. CNSC staff confirmed that environmental monitoring and the EA follow-up program would be essential components of the licensing basis if excavation activities were to be authorized, and that CNSC staff would continue to monitor and verify OPG's compliance with these requirements throughout the various phases of the Project.

85. Asked to discuss the impact of blasting on the existing Darlington NGS, an OPG representative noted that the EA considered the effects of blasting and that these effects were assessed for the chosen reactor technology as well. The OPG representative noted that limits associated with blasting already exist with respect to the St. Marys Cement Facility located near the Darlington Nuclear site, and that OPG has a monitoring program in place with respect to blasting.

86. The Concerned Citizens of Renfrew County and Area (CMD 24-H2.30) raised concerns regarding the stability of the foundation for the reactor design. Asked if temperature differences during reactor startup and shutdown could affect the stability of the foundation, an OPG representative responded that startup and shutdown temperature differences would have no impact on the surrounding environment, and that this assessment was within the bounds of the PPE. The OPG representative noted that the structural design assessments accounted for normal operations, postulated design-basis accidents, and postulated beyond design basis accidents.

[59] Design basis earthquake is an engineering representation of potentially severe effects at the site due to earthquake ground motions having a selected probability of exceedance of $1x10^{-4}$ per year, or such probability level as determined by the regulatory authority.
[60] Beyond design basis earthquake is an engineering representation of potentially severe effects at a site due to earthquake ground motions having a selected probability of less than those of a design basis earthquake.

87. Based on the information on the record, the Commission is satisfied that the EA remains bounding, when considering the impact of the depth of the reactor embedment being outside the bounds of the original PPE. For this conclusion, the Commission relies on the following findings it makes:

- the bedrock featured at the DNNP site is geologically stable
- the temporary impact on groundwater levels during the construction phase, which would be allowed to return to original levels in the post-construction phase, is bound by the permanent changes to groundwater levels assessed in the EIS
- the impact of the deeper embedment on environmental components such as groundwater flow, soil quality, dewatering, noise, volume of soil and rock removal, blasting and ground vibration, air quality, was adequately assessed and is bounded by the conclusions of the EA
- OPG has environmental monitoring and an EA follow-up program in place, and these will continue during future stages of the DNNP

3.3.2.1.5 Activity by isotope of airborne releases

88. In section 2.3 of CMD 24-H2.1, OPG submitted that the BWRX-300 releases would contain the same radionuclides as the previously assessed technologies, but in different proportions. OPG explained that the list of radionuclides used to determine airborne release concentrations for the BWRX-300 was provided by GE Hitachi, and that it performed dose estimate modelling using software and methodology that are compliant with CSA N288.1, *Guidelines for calculating derived release limits for radioactive material in airborne and liquid effluents for normal operations of nuclear facilities*.[61] Based on the dose calculations performed, OPG assessed the total dose for four BWRX-300 reactors resulting from airborne releases to be 0.0012 mSv/year, which is well below the regulatory dose limit for a member of the public, and thus within the bounds of the EA.

89. In sections 2.1.2.3 and 2.2.2.9.1 of CMD 24-H2, CNSC staff summarized its assessment of OPG's analysis. CNSC staff confirmed that the predicted airborne releases for the BWRX-300 reactor type remained below the EA values and the regulatory dose limit for a member of the public.

Discussion

90. The Commission asked OPG for clarification related to the PPE bounding values for airborne releases, and how the dose concentrations were calculated

[61] Canadian Standard Association, CSA N288.1:14, *Guidelines for calculating derived release limits for radioactive material in airborne and liquid effluents for normal operations of nuclear facilities*, 2019.

for the BWRX-300 reactor technology. A representative from OPG explained that the PPE values represented limiting values for radiological releases based on the various reactor technologies assessed, estimated using methodologies established by the USNRC. These values, OPG noted, created a bounding set for releases and provided a conservative estimate of the doses that were subsequently compared to the dose estimates for the BWRX-300 reactor technology. CNSC staff noted that it verified the validity of OPG's assumptions for airborne releases and confirmed that the software and model OPG used to estimate the dose complied with CSA N288.1. During the hearing, CNSC staff explained that the revised assessment assumed that the critical receptor[62] was an infant on a nearby dairy farm, who was exposed to the radiation via ingestion of cow's milk, and that the main contributors to the dose are carbon-14 and radioiodine.[63]

91. The Commission required further information on the scenarios used to model releases and exposure rates. An OPG representative noted that for normal operations, the emission scenarios were based around the normal operating release rates from the BWRX-300 reactor, while the receptors were consistent with those used as part of the environmental monitoring program for the Darlington NGS. For accident conditions, the OPG representative explained that the scenarios used were the same as those identified in the EIS and EA, and that those were assessed as per REGDOC-2.5.2 requirements. CNSC staff confirmed that the methodology used by OPG to establish the accident scenarios and models was consistent with CNSC regulatory requirements.

92. Asked to further comment on the groups of radioisotopes contributing to the estimated doses reported in section 2.1.2.3, Table 2 of CNSC staff's CMD 24-H2, an OPG representative noted that the doses were calculated for individual radionuclides but presented as a group for readability purposes. CNSC staff noted that OPG's methodology was consistent with the acceptable practice outlined in the CSA N288.1.

93. Asked to describe how the release and impact of carbon-14 was assessed, a representative from OPG noted that airborne emissions of noble gases, particulates, tritium, carbon-14 and iodine were all assessed individually, and the overall dose from all airborne emissions was calculated and compared to the regulatory dose limit for the public. The OPG representative added that, although the individual BWRX-300 contributions of carbon-14 and iodine to the overall dose were higher than those assessed in the EIS, the overall estimated dose of 0.0012 mSv/year, which is well below the regulatory dose limit. CNSC staff further explained that the overall dose was based on all the

[62] A representative of the more highly exposed individuals, receiving the highest dose.
[63] Transcript, January 25, 2024, page 14.

radionuclides that could become airborne and reach a receptor through various environmental pathways.

94. The Commission asked for further information on the uncertainties and assumptions associated with the estimates for airborne releases. An OPG representative noted that the limits used for comparison with the calculated values were based on regulatory limits. The OPG representative also explained that the assumptions used at this stage of the Project were very conservative, and that, should the Project proceed, the assumptions would be re-evaluated and refined through design to ensure that doses remain ALARA. The OPG representative further noted that OPG had an extensive EA follow-up monitoring program in place, which would be carried out over the lifecycle of the Project, to verify the predictions of the EA.

95. The Commission asked OPG to comment on the process of managing airborne releases. A representative from OPG explained that noble gases would be released in very small amounts continuously, as part of normal operations, as the non-condensable gases are removed from the steam. The OPG representative noted that the off-gas system would delay the release of noble gases for a short time to allow for some decay.

96. The Radiation Safety Institute of Canada (CMD 24-H2.39, CMD 24-H2.39A) expressed concerns that the BWRX-300 design had a higher "dose per megawatt electric" than the reactors under consideration in the EA. Asked to comment, both OPG and CNSC staff noted that comparing reactor technologies by expressing annual doses per megawatt electric is not common industry practice because dose assessments include a variety of other site-specific factors.

97. Several intervenors, Durham Nuclear Awareness, Slovenian Home Association and the Canadian Environmental Law Association (CMD 24-H2.8, CMD 24-H2.8A), Sarah Gabrielle Baron (CMD 24-H2.10), Northwatch (CMD 24-H2.32, CMD 24-H2.32A), Nuclear Transparency Project (CMD 24-H2.35), Dennis LeNeveu (CMD 24-H2.38) and the Radiation Safety Institute of Canada (CMD 24-H2.39, CMD 24-H2.39A), raised concerns about the doses from radioiodines and carbon-14 emissions, which were higher for the BWRX-300, and about the impact of radiation from the BWRX-300 reactor on the public. CNSC staff explained that the *Radiation Protection Regulations*[64] prescribe dose limits for workers and the public that are based on recommendations by the International Committee on Radiation Protection (ICRP). With respect to ascertaining doses to workers, CNSC staff noted that OPG is qualified and holds a dosimetry licence that authorizes it to ascertain doses from tritium, carbon-14, mixed fission and activation products. More generally, CNSC staff

[64] SOR/2000-203.

described its ongoing work with health studies and to understand the characteristics of various radionuclides, how radionuclides enter the body, how they behave in the body and what their effects can be. CNSC staff noted that the CNSC's work in radiation protection was also informed by the international community, and that new information could inform future changes in regulatory requirements for radiation protection.

98. Based on the information on the record, the Commission concludes that the EA remains bounding, when considering the activity by isotope of airborne releases being outside the bounds of the original PPE. The Commission finds that:

- the overall dose from the BWRX-300 reactor technology was estimated to be 0.0012 mSv/year, which is well below the regulatory dose limit of 1 mSv/year for a member of the public
- the assessments were performed using acceptable practices outlined in CSA standards and CNSC regulatory documents

3.3.2.1.6 Lower minimum release height above finished grade

99. In section 2.3 of CMD 24-H2.1, OPG submitted that the minimum release height above finished grade was a PPE input parameter into the radiological dose modelling, and that the BWRX-300 reactor building and surrounding buildings were shorter than those assessed in the EA, resulting in a lower release height. During the hearing, OPG further explained that, although the stack height value was taken to be 38 m for the BWRX-300 during the EIS Review and PPE revision, the actual stack height, accounting for the grade elevation would be 10 m higher (i.e., 48 m), which would be only 0.8 m below the PPE value of 48.8 m.

100. OPG reported that the dose analysis performed for the lower release height found that the total release was 1.5% of the EA value and the calculated radiological dose to the public (0.0012 mSv/year) was well below the regulatory public dose limit of 1 mSv/year and less than the value assessed in the EA, as described in section 3.3.2.1.5 in this *Record of Decision*.

101. In section 2.1.2.3 of CMD 24-H2, CNSC staff submitted that it verified OPG's calculations for the lower release height and confirmed that the total release was bounded by the EA and well below the public dose limit.

102. Based on the information on the record, the Commission concludes that the EA remains bounding, when considering the lower minimum release height being outside the bounds of the original PPE. The Commission finds that:

- the total releases the BWRX-300 reactor technology represent 1.5% of the total release value evaluated in the EA

- the predicted dose to the public remains well below the regulatory dose limit of 1 mSv/year
- the assessments were performed using acceptable practices outlined in the CSA N288.1

3.3.2.1.7 Activity by isotope of solid radioactive waste

103. In section 2.3 of CMD 24-H2.1, OPG reported that the two PPE parameters for solid radioactive waste were the total annual volume generated and the annual activity by radionuclides present in solid radioactive wastes. OPG added that the total annual activity for solid radioactive wastes generated for the BWRX-300 was lower than that identified in the PPE. OPG noted that the activity by isotope of solid radioactive waste was an input to the assessment of doses to the public and workers related to radiological malfunctions and accidents. OPG assessed the effects of changes in waste composition and concluded that the EA remains bounding.

104. In section 2.1.2.4 of CMD 24-H2, CNSC staff reported that the change in PPE parameters for activity by isotope of solid radioactive waste was within the bounds of the EA. CNSC staff explained that although the radionuclides generated by the BWRX-300 reactor had different proportions than those in the PPE, requiring a different approach to managing waste, the total volumetric activity in becquerels per cubic metre (Bq/m^3) was lower than the EA bounding scenario.

Discussion

105. Asked to discuss the relationship between radioactivity in solid waste and the calculated doses, an OPG representative explained that, for normal operations, the radioactivity in solid waste is taken into consideration when assessing annual doses for workers. The OPG representative added that, for accident conditions, it reassessed the scenarios for doses to workers and members of the public used in the EA using the source term for the BWRX-300.

106. The Radiation Safety Institute of Canada (CMD 24-H2.39, CMD 24-H2.39A) expressed concerns regarding lower unconditional clearance levels that may result in slightly contaminated materials being considered as radioactive waste. Asked for further information on this topic, an OPG representative explained that the use of unconditional clearance levels would apply only to a very specific category of waste which would follow specific criteria for unconditional clearance. The OPG representative added that the type of material that would fit these criteria would undergo a predetermined review process prior to being disposed of.

107. Based on the information on the record, the Commission concludes that the EA remains bounding, when considering the activity by isotope of solid radioactive waste being outside the bounds of the original PPE. The Commission finds that:

- the total volume of solid waste from the BWRX-300 reactor is less than that of the reactor designs specifically considered in the EA
- the total volumetric activity for the BWRX-300 reactor technology is less than the EA bounding scenario
- the radionuclide makeup of solid waste from the BWRX-300 reactor is similar to other thermal reactor solid waste
- OPG intends to account for the differences in radionuclide proportions for the BWRX-300 by adapting its approach to waste management

3.3.2.1.8 Spent fuel cask weight

108. In section 2.3 of CMD 24-H2.1, OPG submitted that the spent fuel cask weight is a listed parameter in the PPE, but this parameter was not directly used in the EIS. OPG reported that the PPE reactors had a limiting cask weight of 100 tonnes, while the PPE value for the BWRX-300 design was 113 tonnes. OPG submitted that the change would be mitigated by designing the hauling roads on the DNNP site to accommodate the cask weight, without any impact to the conclusions of the EIS.

109. In section 2.1.2.4 of CMD 24-H2, CNSC staff submitted its assessment that the proposed upgrade in on-site hauling road capacity was feasible and an acceptable mitigation measure. CNSC staff confirmed that the change in this parameter would not result in additional environmental effects, and therefore this parameter was bound by the EA.

Discussion

110. Several intervenors, including the Darlington Nuclear Community Advisory Council (CMD 24-H2.4), Durham Nuclear Awareness, Slovenian Home Association and the Canadian Environmental Law Association (CMD 24-H2.8, CMD 24-H2.8A), Sarah Gabrielle Baron (CMD 24-H2.10), Simon J. Daigle (CMD 24-H2.37), Nuclear Transparency Project (CMD 24-H2.35) and the Radiation Safety Institute of Canada (CMD 24-H2.39, CMD 24-H2.39A) raised concerns regarding the weight of the spent fuel cask, and the potential impact to road infrastructure and conditions. A representative from OPG explained that the value used for the revised PPE was based on the heaviest BWR containers currently available and noted that the actual dry storage container design had not yet been determined. The OPG representative added that OPG would assess

the actual impacts on infrastructure after the cask design is finalized, and that OPG would then implement any necessary upgrades to on-site infrastructure.

111. Based on the information on the record, the Commission concludes that the EA remains bounding, when considering the spent fuel cask weight being outside the bounds of the original PPE. The Commission finds that:

- the potential increase in spent fuel cask weight does not introduce additional environmental effects that were not bounded by the EA
- OPG has proposed acceptable mitigation measures to accommodate an increase in spent fuel cask weight

3.3.3 *Environmental Impact Statement Review*

112. The EIS describes the existing environment and summarizes the systematic analysis and identification of potential environmental effects of the DNNP. The environment being analyzed was divided in three areas:

- the site study area consisting of the DNNP Project lands
- the local study area consisting of the Darlington Nuclear site and the area of Clarington closest to the site
- other lands, communities and portions of Lake Ontario relevant to assessment of effects of the DNNP

113. OPG's EIS Review examined the environmental conditions on-site and near the DNNP to determine whether the deployment of 4 BWRX-300 reactors was within the bounds of the EA. In section 3.1 of CMD 24-H2.1, OPG submitted that the EIS Review included:

- existing environmental conditions
- project works and activities for each Project phase
- likely environmental effects
- residual adverse effects, taking into consideration mitigation measures and project design features
- follow-up and monitoring programs to verify predictions of environmental effects identified in the EIS
- effects of the environment on the Project
- malfunctions, accidents and malevolent acts
- cumulative effects
- significance of residual adverse effects

OPG reported that the EIS Review determined that the conclusions of the 2009 EIS remain valid for the deployment of 4 BWRX-300 reactors at the DNNP site.

114. In section 2.2 of CMD 24-H2, CNSC staff summarized the list of environmental components and sub-components assessed in the EA. In section 2.2.2 of CMD 24-H2, CNSC staff summarized its review and conclusions on OPG's EIS Review, focusing on environmental components and valued ecosystem components (VECs)[65] within its mandate. For topics such as Physical and Cultural Heritage Resources, Socio-Economic Environment, and Traffic and Transportation, which are outside the mandate of the CNSC, CNSC staff relied upon the expertise of relevant federal and provincial regulatory bodies. CNSC staff concluded that OPG adequately assessed and addressed the changes to applicable environmental components and VECs and showed that the conclusions of the EA are bounding for OPG's chosen reactor technology.

3.3.3.1 Other Valued Components

115. OPG's EIS Review examined the environmental conditions on the DNNP site and near the DNNP, to determine whether the deployment of up to 4 BWRX-300 reactors is within the bounds of the EA and to evaluate existing environmental conditions and changes that have occurred since the completion of the EIS. This section examines a subset of environmental components about which specific concerns have been raised.

3.3.3.1.1 Surface Water Environment

116. In section 3.2 of CMD 24-H2.1, OPG submitted that the BWRX-300 utilizes once-through lake water cooling, and would require less marine and shoreline work than predicted in the EA. OPG noted that:

- the cooling flow rate for 4 BWRX-300 reactors is less than 68 m^3/s, which is lower than what was considered in the EIS (i.e., 228 m^3/s) for 4 reactors,[66] thus resulting in lesser effects to the aquatic environment
- reduced effects would be anticipated for lake water circulation patterns, shoreline processes and temperature at the mouth of Darlington Creek
- the BWRX-300 would be operated as a zero radiological liquid release facility during normal operation

117. In section 2.2.2.5 of CMD 24-H2, CNSC staff submitted information on its assessment of OPG's EIS Review with respect to surface water environment components such as lake circulation, lake water temperature, site drainage and water quality and shoreline processes. CNSC staff determined that no surface

[65] Valued Ecosystem Components are features of each environmental component selected to be the focus of the study because of their value to the community and their potential vulnerability to effects of the DNNP.
[66] OPG EIS Review, *supra* note 20, section 5.8.1, pages 90-91.

water project-environment interactions were expected and that changes to surface water were adequately assessed.

Discussion

118. Asked to comment if releases to a receiving body of water would occur, an OPG representative submitted that no releases to local bodies of water and the environment would occur during normal operations. The OPG representative explained that the BWRX-300 is designed to operate as a zero radiological liquid release facility, where the liquid waste management system would collect liquids during normal operations, filter the water to remove radioactive contaminants and recycle the filtered water back into the plant. The OPG representative noted that some discharges could occur under accident conditions, but these discharges would be significantly less than what was assessed in the EA and would have to comply with the regulatory requirements for surface discharge. The OPG representative further noted that OPG's environmental monitoring program would monitor any releases.

119. CNSC staff confirmed that, for the scope of this hearing and this stage of the Project, the predicted effects of the BWRX-300 reactor technology with respect to the surface water environment are bounded by the EA. CNSC staff noted that it would verify OPG's implementation of measures to address the CNSC's regulatory requirements relating to control of releases to the environment at future stages of the Project.

120. The Commission asked for further information on the potential effects of a thermal plume.[67] An OPG representative explained that a thermal plume was expected as part of the condenser cooling water system. The OPG representative noted that the scenarios assessed in the EA were based on a higher flow, greater quantity of water, and warmer water temperature than those for the BWRX-300, and that the scenarios assessed for the BWRX-300 were within the effects predicted in the EA, including effects on biota. OPG added that the condenser cooling water system and the thermal plume would be part of the same continuously monitored system, and that modelling work was done to optimize the design of the discharge to minimize the effects of the thermal plume.

121. Based on the information on the record, the Commission concludes that the EA remains bounding, when considering the effects of the BWRX-300 reactor technology on the surface water environment. The Commission finds that:

- the maximum flow rate required for 4 BWRX-300 reactors is 3 times lower than the maximum flow rate assessed in the EIS

[67] A thermal plume is a stream-like flow of water that is warmer than the body of water it is discharged into.

- the BWRX-300 reactor technology does not introduce additional surface water environmental effects that are not bounded by the EA

3.3.3.1.2 Land and Resource Use

122. In section 2.2.2.7 of CMD 24-H2, CNSC provided information concerning the land use environment. CNSC staff submitted that it has been engaged and will continue to be engaged in land use planning and development discussions with OPG, the Municipality of Clarington, and the Region of Durham. CNSC staff also noted that, as required by licence condition 3.2 of OPG's licence to prepare site for the DNNP, OPG has provided an annual report on activities conducted under its licence for DNNP, including updated information on land use planning and potential developments around the DNNP.

123. In section 2.2.2.8.2 of CMD 24-H2, CNSC summarized information concerning the Transportation System Safety sub-component, which assesses the safety of the transportation system. CNSC staff noted that the EA Report predicted two potential effects on the safety of the transportation system as a result of the DNNP:

- an increase in occurrence of collisions along the major roadways within the area surrounding the Darlington Nuclear site due to an increase in traffic volume
- a potential for increased frequency of collisions between trucks and trains due to disposal of an unknown quantity of excavated material that would need to be removed from the Darlington Nuclear site

CNSC staff summarized its review of OPG's documentation related to the Transportation System Safety sub-component, and concluded that the deployment of the BWRX-300 reactor is not anticipated to introduce changes that would affect the safety of the transportation system. Furthermore, CNSC staff noted that the reduced physical footprint of the BWRX-300 reactor is estimated to result in a lower volume of excavated material, which would likely be contained within the available volume in on-site disposal areas, thus reduce off-site transportation requirements.

Discussion

124. The Waterfront Regeneration Trust (CMD 24-H2.2), and the Darlington Nuclear Community Advisory Council (CMD 24-H2.4) raised concerns regarding land use, and in particular, potential impacts to the Great Lakes Waterfront Trail, which connects multiple communities and First Nations along the shore of Lake Ontario. The Great Lakes Waterfront Trail would be impacted during the construction phase of the Project. Asked if the trail would be restored

once the construction phase was completed, an OPG representative clarified that a 1.4-kilometre portion of the trail had been diverted to prioritize the safety of potential trail users during site preparation and construction. An OPG representative noted that OPG had been working with the Municipality of Clarington and the Darlington Nuclear Community Advisory Council on restoring use of the diverted portion of the trail once it was safe to do so. The OPG representative added that OPG had sought input from trail users, Indigenous Nations and communities and the local community regarding the future of the trail.

125. Several intervenors, the Durham Nuclear Awareness, Slovenian Home Association and the Canadian Environmental Law Association (CMD 24-H2.8, CMD 24-H2.8A), Sarah Gabrielle Baron (CMD 24-H2.10), Northwatch (CMD 24-H2.32, CMD 24-H2.32A), raised concerns about the suitability of the DNNP site for construction of a new reactor, considering the population growth and urbanization that has occurred within the Durham region and the Greater Toronto Area. The EA discussed the impact of various socio-economic components including population growth, transportation, visual impact of the Project, land use and waste management to the human environment and concluded that the Project is not likely to result in significant adverse socio-economic environmental effects taking into account the implementation of mitigation measures.[68] The Commission requested more information on how population changes and land use changes were assessed during the PPE update and EIS Review. A representative from OPG noted that population density changes are not directly reflected in the PPE methodology; however, they are indirectly accounted for in various parameters such as dose estimates and emergency preparedness and response. The OPG representative noted that, for emergency preparedness modelling, population density changes are considered for evacuation response time and are tested during both OPG drills and drills coordinated with the Province of Ontario. A representative from Emergency Management Ontario (EMO) noted that EMO was undertaking a new technical study that would inform the planning basis for the new Provincial Nuclear Emergency Response Plan and any changes that may be required due to the potential addition of a BWR on the Darlington Nuclear site.[69]

126. The Commission asked if the transportation of large equipment to the DNNP site for the BWRX-300 would introduce any changes to the PPE. A representative from OPG stated that the transportation of equipment to the Darlington Nuclear site and the sourcing of various equipment was assessed to be within the bounds of the previous PPE and the EA.

[68] JRP EA Report, s*upra* note 4, section 6.1.2, pages 93-94.
[69] Transcript, January 23, 2024, page 204.

127. The Commission asked the representative from the Regional Municipality of Durham to discuss its plans with respect to the DNNP. The representative explained that the Region of Durham has approved and submitted a new official plan to the Province of Ontario which discusses land uses around the nuclear power plants, significant increases in population, and plans to expand the infrastructure to accommodate these changes. The representative also noted that in drafting and developing the official plan, the region engaged with various Indigenous communities including the Mississaugas of Scugog Island First Nation.

128. Based on the information on the record, the Commission concludes that the EA remains bounding, when considering the effects of the BWRX-300 reactor technology on land and resources use. The Commission finds that:

- OPG is actively working with the Municipality of Clarington and the Darlington Nuclear Community Advisory Council to develop a plan for the restoration of the 1.4 km portion of the Great Lakes Waterfront Trail once the DNNP construction phase of the Project is completed
- the change in population density is accounted for in the PPE as part of key parameters such as dose calculations and emergency preparedness and response, and its effects are bounded by the conclusions of the EA
- the reduced footprint of the BWRX-300 reactor and OPG's ability to retain excavated material on-site help mitigate the adverse effect on the transportation identified in the EA, thus the EA remains bounding

3.3.3.1.3 Terrestrial Environment and Species at Risk

129. In section 2.2.2.6 of CMD 24-H2, CNSC staff submitted information on and conclusions from its review of various terrestrial environment components including:

- vegetation communities and species
- insects
- bird communities and species
- amphibians and reptiles
- mammal communities and species
- landscape connectivity

CNSC staff determined that OPG's EIS Review adequately addressed the terrestrial environment project-environment interactions. CNSC staff explained that the changes to species at risk under the federal *Species at Risk Act*,[70] or the provincial *Endangered Species Act*,[71] would remain bounded by the EA, provided the mitigation measures and follow-up program are implemented.

[70] S.C. 2002, c. 29.
[71] *Endangered Species Act, 2007*, Statutes of Ontario (S.O.) 2007, c. 6.

Discussion

130. In its written submission, the Nuclear Transparency Project (CMD 24-H2.35) raised concerns regarding the limited list of species at risk identified in OPG's EIS Review compared to OPG's Environmental Risk Assessment (ERA) for the Darlington Nuclear site. A representative from OPG noted that the list of species in OPG's ERA is more extensive than what was included in the EIS Review, clarifying that, although the species noted by the intervenor were not specifically stated in the EIS Review report, those species were included in the original EIS and assessed during the EA.

131. Several intervenors, the Darlington Nuclear Community Advisory Council (CMD 24-H2.4), Northwatch (CMD 24-H2.32, CMD 24-H2.32A), Nuclear Transparency Project (CMD 24-H2.35), and Métis Nation of Ontario (CMD 24-H2.34), raised concerns regarding potential impacts to species at risk, including bats and bank swallows, as well as their habitats. A representative from OPG responded that OPG has a comprehensive biodiversity program for the Darlington site, which includes annual surveys of a wide variety of species, breeding birds and species at risk. Regarding bats and bat habitats, the OPG representative noted that OPG's surveys identified species-at-risk bats and their location on the DNNP site. The OPG representative also described OPG's annual surveys of bank swallows and their habitats since the EA.

132. CNSC staff noted that bats were not considered during the EA since they were not identified at the DNNP site at that time. CNSC staff added that, since bats were identified, OPG has been monitoring and identifying mitigation measures to protect the bats' habitat. With respect to bank swallows, CNSC staff noted that OPG, the CNSC, and other government agencies have had a working group focused on the conservation and protection of the species.

133. A representative from Environment and Climate Change Canada (ECCC) explained that at the time of the EA, bank swallows were not considered a species at risk but they became one after the EA was approved by the Government of Canada. The ECCC representative noted that as migratory birds, in addition to being subject to the *Species at Risk Act*, bank swallows are also addressed in the *Migratory Bird Convention Act*.[72] The ECCC representative provided the Commission with information on how these federal statues would apply to species at risk such as bank swallows and bats. The ECCC representative noted that as the DNNP is not on federal land, permits would be required only under the Ontario *Endangered Species Act*.[73]

[72] Environment and Climate Change Canada, *Migratory Birds Convention Act*, 1994.
[73] *Endangered Species Act,* 2007, *supra* note 71.

134. A representative from Ontario Ministry of the Environment Conservation and Parks (MOECP) provided information on the Ontario *Endangered Species Act* and is applicability to the DNNP. The MOECP representative noted that it is anticipated that OPG would seek 3 permits under the *Endangered Species Act*, and that the first of these was issued for site preparation work. The MOECP representative described the permitting process, noting that mitigation measures are required to minimize impacts to species and habitats, as well as to support their protection and recovery.

135. Asked for further information on the conservation and protection measures taken with respect to bank swallow habitat, a representative from OPG stated that OPG has been working with researchers and learning from international experience on this topic, as well as testing an artificial nesting habitat for bank swallows. The OPG representative noted that in 2021, OPG constructed several test structures for artificial nesting habitats based on experience with similar structures used in Canada and in the Netherlands. OPG added that during the first 2 years of operation, the structures did not see any uptake of bank swallows, however, during the latest breeding season, all the burrows were occupied. OPG further noted that the test structures will be in operation for a period of 7 years, before determining their success.

136. Based on the information on the record, the Commission concludes that the EA remains bounding, when considering the effects of the BWRX-300 reactor technology on the terrestrial environment, including species at risk. The Commission finds that:

- the list of species at risk monitored and evaluated by OPG includes all species of risks identified in the EA, as well as any additional, applicable species added to the *Endangered Species Act* since the EA
- OPG is carrying out research work related to artificial nesting habitats for bank swallows to minimize the environmental impact of the DNNP
- the measures proposed for mitigating the effects on bats species are adequate and do not introduce additional effects that are not bounded by the EA

3.3.3.1.4 Climate Change

137. In the EIS Review report, OPG submitted that it assessed both effects of climate change on the deployment of the BWRX-300 reactor technology, as well as the effects of the Project on climate change. OPG concluded that there are no medium or high-risk interactions between the various climate change parameters assessed and the deployment of the BWRX-300 reactor due to its ability to deal with extreme weather events. OPG further noted that, prior to construction, OPG would prepare a contingency plan for the construction,

operation and decommissioning phases, to evaluate the effects of climate change on the Project area. OPG noted that this is an OPG commitment in response to JRP's recommendation #39, which is tracked as part of OPG's DNNP Commitments Report.[74]

Discussion

138. In response to concerns around climate change raised by North American Young Generation in Nuclear Durham Chapter (CMD 24-H2.14), the Commission asked OPG to discuss its assessment of climate change, and of wildfires in particular. An OPG representative explained that OPG's climate change assessment was divided into two phases:

- an assessment of conditions and parameters that could affect climate change through the operating life of the DNNP, projected over 60 years, which would include changes in significant weather events of relevance
- a determination of mitigation measures to address the identified conditions and parameters

139. Asked for clarification on the limiting inlet temperature for the condenser system,[75] an OPG representative noted that OPG's climate change assessment looked into increases in lake temperature and other parameters that could be affected by climate change. The OPG representative noted that the temperature used in the assessment was conservative, and that the assessment confirmed that there was significant safety margin for this parameter.

140. Based on the information on the record, the Commission is satisfied that the EA remains bounding, when considering the effects of climate change on the BWRX-300 reactor technology and of the proposed reactor technology on climate change. The Commission finds that:

- OPG has appropriately addressed the impact of climate change on the Project as well as the impact of the Project on climate change
- the effects of climate change on the BWRX-300 reactor deployment are consistent with the conclusions of the EA
- the effects of the DNNP on climate change do not introduce additional effects that are not bounded by the EA
- OPG will prepare a contingency plan for construction, operation and decommissioning stages to account for uncertainties associated with flooding and other extreme weather hazards, in accordance with JRP recommendation #39

[74] OPG's commitment D-C-7.1, in response to JRP's Recommendation #39, tracked under the *Darlington New Nuclear Project Commitments Report*, OPG document number NK054-REP-01210-00078, revision 8, dated August 2022.
[75] Maximum acceptable circulating water temperature at the inlet to the condenser or cooling water system heat exchangers.

3.3.3.1.5 Effects of Malfunctions, Accidents and Malevolent Acts

141. In section 3.1 of CMD 24-H2.1, OPG submitted that the review of the EIS included a review of malfunctions, accidents and malevolent acts. OPG added in section 3.2 that the environmental effects, including effects from accidents, malfunctions and malevolent acts from the BWRX-300 reactor were reasonably predicted to be less than those assessed in the EA. OPG explained that the accident conditions evaluated included conventional and transportation accidents, nuclear and criticality accidents, and malevolent acts and their effects on the human health and the health of non-human biota,[76] and further discussed each one of these categories in section 5.7 of the EIS Review report.[77]

142. In section 2.2.2.11 of CMD 24-H2, CNSC staff summarized the assessment of OPG's analysis regarding malfunctions, accidents and malevolent acts. CNSC staff submitted that:

- it focused its review on nuclear accidents leading to a potential radiological release to the environment
- the hazards assessed included internal hazards, external hazards and non-malevolent human-induced hazards
- potential combinations of external hazards and interactions between external and internal hazards were considered
- OPG's submissions to date demonstrate that the design of the BWRX-300 reactor meets the safety goals included in REGDOC-2.5.2
- although some of the estimated doses to workers and members of the public increased from the estimates in the EA, they remained consistent with the evaluation criteria in the EA as they are lower than the regulatory dose limits from the *Radiation Protection Regulations*
- CNSC staff will continue to review subsequent probabilistic safety assessment submissions throughout the various future licensing phases of the Project[78]

Discussion

143. The Society of United Professionals (CMD 24-H2.6), Durham Nuclear Awareness, Slovenian Home Association and the Canadian Environmental Law Association (CMD 24-H2.8, CMD 24-H2.8A), Ann McAllister (CMD

[76] OPG EIS Review, *supra* note 20, Executive Summary, page iv.
[77] *Ibid.* section 5.7 *Review of Malfunctions, Accidents, and Malevolent Acts*, page 83 – 89.
[78] In Appendix B of CMD 24-H2, CNSC staff submitted the status of JRP's recommendations to date, and noted that the recommendations span the lifecycle of the DNNP and OPG is managing these recommendations through the DNNP Commitments Report. Recommendation #63 deals with severe accidents involving multiple reactors on the Darlington Nuclear site, is open and it will be addressed by OPG during future phases of the Project.

24-H2.19), Northwatch (CMD 24-H2.32, CMD 24-H2.32A), Gordon Edwards (CMD 24-H2.33), Nuclear Transparency Project (CMD 24-H2.35), and Simon J Daigle (CMD 24-H2.37), raised concerns about the depth of the analysis performed by OPG in terms of multi-unit accidents including the existing reactors at the Darlington site, out-of-core criticality accidents, and malevolent acts.

144. The Commission asked for clarification on out-of-core criticality accidents discussed in the EIS Review. An OPG representative noted that out-of-core criticality accidents would be further addressed as part of the application for a licence to construct as potential beyond design basis accidents. This approach is aligned with the EA Report, that states "that once a technology has been selected for the Project there will be a need for more specific analysis of potential accidents and the consequent releases and health effects. The review of the Application for a licence to construct the reactor would require confirmation that the health effects conclusion from the present assessment remains valid for the predicted accident conditions."[79] OPG clarified that these postulated accidents have very small frequencies of occurrence, in the order of 1 in 10 million to 1 in 100 million years, and as such, the risk of such accidents remains very low. CNSC staff further explained that the regulatory requirements for out-of-core criticality analysis are detailed in REGDOC-2.4.3, *Nuclear Criticality Safety*,[80] and they cover both prevention of criticality accidents under all normal and credible abnormal conditions and provisions with respect to protection of the public and workers against the consequences of postulated criticality accidents. CNSC staff added that REGDOC-2.4.3 discusses both probability and consequences of criticality accidents and is consistent with international standards and guidelines.

145. Asked if accidental releases of irradiated steam had been assessed, an OPG representative explained that steam releases were assessed as both design basis accidents and beyond design basis accidents and documented in the preliminary safety analysis report. The OPG representative noted that the doses estimated for these types of accidents would be primarily due to noble gasses and fission products that were postulated to be released along with the irradiated steam, and noted that their values were calculated to be a small fraction of the regulatory dose limits.

146. The Commission requested further information on multi-reactor accidents. An OPG representative explained that, with respect to the external hazard that the Darlington NGS could pose to the DNNP, this scenario is covered by the external hazards analysis performed as part of the preliminary safety analysis report submitted with the licence to construct application. The OPG

[79] JRP EA Report, *supra* note 4, section 7.2.2., page 125.
[80] REGDOC-2.4.3, *Nuclear Criticality Safety*, version 1.1, 2020.

representative also noted that the DNNP project is standalone, and does not share any safety systems with the existing Darlington NGS.

147. With respect to multi-reactor accidents, CNSC staff also discussed the considerations that went into the assessment of these scenarios, from a dose assessment perspective. CNSC staff explained that, for public dose, the EA evaluation criterion was 1 mSv, while the worker doses applied the dose limits from the *Radiation Protection Regulations*. CNSC staff confirmed that OPG's revised assessment scenarios for the dose to public remained below the 1 mSv EA evaluation criterion.

148. Asked to elaborate on modelling assumptions used for the pool fire accident scenario, an OPG representative explained that the pool fire scenario used for the BWRX-300 was the same as that used in the EIS, involving a material-handling accident that resulted in a flammable liquid such as gasoline spilling next to the source of radioactive material, resulting in a release of radionuclides. The OPG representative noted that the exposure scenario for members of the public assumed a plume based on all source radionuclides with a 30-day whole-body dose exposure. The OPG representative confirmed that the pool fire accident scenario analyzed for the BWRX-300 was within the corresponding PPE analysis.

149. Based on the information on the record, the Commission concludes that the EA remains bounding, when considering the effects of malfunctions, accidents and malevolent acts. The Commission finds that:

- the scenarios assessed for the BWRX-300 reactor technology are consistent with those previously assessed in the EIS
- the effects on human health and the health of non-human biota are bounded by the effects by those of the EA
- the depth of the analysis is sufficient for the scope of this hearing

3.3.3.1.6 Cumulative Environmental Effects

150. In section 3.2 of CMD 24-H2.1, OPG submitted that environmental effects, including the effects from accidents, malfunctions and malevolent acts[81] as well as the Project's effects on the environment, are expected to be less overall for the BWRX-300 reactor than those that were assessed in the EA. In the EIS Review report,[82] OPG provided an update on planned and future activities that are still relevant to the Project and noted the review of cumulative effects focused on relevant receptors in four areas of interest: aquatic, terrestrial, visual

[81] Effects from accidents, malfunctions and malevolent acts are further discussed in section 3.3.3.1.5 of this *Record of Decision*.
[82] OPG EIS Review, *supra* note 20, at section 5.8, pages 89-97.

landscape, and socio-economic components of the environment. OPG determined that there were no new adverse effects that would arise from BWRX-300 deployment that would require further consideration in the cumulative effects assessment. OPG also determined that no additional mitigation measures were necessary for the minor residual cumulative effects that were identified for applicable components. During the hearing, OPG highlighted that the BWRX-300 reactor is smaller in physical size and electrical power than the reactor technologies that were specifically included in the EA, thus requiring a smaller workforce, less on-site traffic, excavation of a smaller volume of soil and rock and increased opportunities to retain on-site habitats. These topics are discussed further in sections 3.3.2 and 3.3.3 of this *Record of Decision*.

151. CNSC staff confirmed the validity of the EA with respect to the cumulative effects assessment, and that residual significant adverse cumulative effects associated with the proposed deployment of the BWRX-300 reactor were not likely to occur. In section 2.2.2.12.5 of CMD 24-H2, CNSC staff submitted that OPG's EIS Review adequately assessed changes to the cumulative environmental effects assessment for the DNNP.

152. Indigenous intervenors, including the Hiawatha First Nation (CMD 24-H2.23, CMD 24-H2.23A), and the CLFN (CMD 24-H2.25, CMD 24-H2.25A), and the MSIFN (CMD 24-H2.26, CMD 24-H2.26A), raised concerns regarding the adequacy of the cumulative effects assessment as it relates to the potential cumulative effects on asserted Aboriginal rights and interests. During the joint oral intervention, the MSIFN, CLFN and Hiawatha First Nation expressed the view that traditionally, EAs have a narrow focus with respect to cumulative effects, and do not include the broad scope of Indigenous Knowledge systems which focus on:

- interconnectedness of proposed activities with all living things
- sustainable management of the lands
- conservation of biodiversity
- reduction in carbon emissions

Furthermore, the Indigenous Nations noted that it is not clear if the cumulative effects assessment carried out by OPG included an understanding of the legacy impacts of the already operating Darlington NGS. Asked by the Commission to elaborate on the general framework for the cumulative effects assessment, the representative the MSIFN noted that their respective communities would need to be involved in defining the elements and values that need to be protected and how to incorporate them in the cumulative study.[83] The representative further noted the added complexity generated by the fact that their treaty rights were only formally recognized in 2018. The MSIFN, CLFN and Hiawatha First

[83] Transcript, January 23, 2024, page 117.

Nation also acknowledged that these studies and analyses will take a significant amount of time and resources from all parties involved, and expressed their willingness to work collaboratively with OPG and CNSC staff to develop a framework for the cumulative effects assessment.

153. The Durham Nuclear Awareness, Slovenian Home Association and the Canadian Environmental Law Association (CMD 24-H2.8, CMD 24-H2.8A) and the Nuclear Transparency Project (CMD 24-H2.35) raised concerns regarding the sufficiency of information related to cumulative effects of the proposed Project on on-site soil, groundwater, surface water and multi-unit accidents including the existing reactors at the Darlington Nuclear site. These topics are discussed further in sections 3.3.3.1.1 and 3.3.3.1.5 of this *Record of Decision*.

Discussion

154. The Commission asked OPG and CNSC staff for more information concerning the status of a cumulative effects assessment as it relates to the Project's potential cumulative effects on asserted Aboriginal rights and interests. An OPG representative noted that when it comes to a cumulative effects assessment, one approach is to look at the overall impacts of the nuclear sector. The OPG representative expressed the view that, "while the assessment of environmental effects has been satisfied from the Western perspective, it may not fully address the impact of the Darlington New Nuclear Project on Aboriginal and treaty rights, as they are understood today, particularly in light of the Williams Treaties First Nations 2018 settlement agreement."[84] The OPG representative also noted that there are follow-up activities around cumulative effects assessments that OPG is committed to and is undertaking, in particular looking at aquatic, impingement/entrainment and thermal plume effects. Additionally, in supplementary submission CMD 24-H2.1B, OPG submitted that a scoping exercise will be carried out in the first quarter of 2024 to start the development of an Indigenous Knowledge Study with the Williams Treaties First Nations, which may include or lead to a cumulative effects study. CNSC staff added that, as part of the CNSC's lifecycle approach, cumulative effects are assessed during periodic environmental risks assessments, which are carried out based on the most recent standards and regulations over the life of a project.

155. Based on the information on the record as described above, the Commission concludes that residual significant adverse cumulative effects associated with the proposed deployment of the BWRX-300 reactor are bounded by the EA. The Commission finds that:

[84] Transcript, January 23, 2024, page 28.

- there were no new adverse effects that would arise from BWRX-300 deployment that would require further consideration in the cumulative effects assessment
- no additional mitigation measures are necessary for residual cumulative effects

156. The Commission acknowledges, as has OPG and several of the Indigenous Nations and communities, that there has been an evolution over time, in what may be expected, in terms of a cumulative effects assessment on Indigenous rights. In light of this, which relates not to the technology choice of OPG – and therefore the efficacy of the EA that was done – but to the evolution of these expectations, the Commission expects that:

- OPG shall work collaboratively with Williams Treaties First Nations and make best efforts to scope out the extent, timing and content of an updated cumulative effects assessment including cumulative effects on Indigenous rights in the Project area incorporating Indigenous knowledge
- CNSC staff shall support OPG's undertaking of a cumulative effects assessment that includes cumulative effects on Indigenous rights in the Project area

157. The Commission acknowledges that cumulative effects of an ongoing project, and historical context, inform the scope of the duty to consult. However, the Commission's direction in this decision for an updated assessment of cumulative effects in the EIS is not an attempt to redress past wrongs; it is to recognize an existing state of affairs and to address the consequences of what may result from the Project.[85]

3.3.4 *Public Engagement*

158. In section 4 of CMD 24-H2.1, OPG submitted a summary of its public and community engagement initiatives, related to the DNNP, including the following:

- a public information centre
- a dedicated public website
- public inquiries, feedback and opinion polling
- social media presence
- community outreach, information sessions and site tours

OPG also submitted that it sought feedback and comments from stakeholders and members of the public as part of the preparation for the EIS and PPE review activities. OPG reported that it carried out 2 information sessions on the

[85] *Chippewas of the Thames First Nation v Enbridge Pipelines Inc*., 2017 SCC 41 at para 42 [Chippewas].

project, provided updates during community meetings, fairs and other events and held 2 workshops on the EIS Review and PPE review. OPG noted its commitment to continuing to engage with stakeholders and the public through all phases of the Project.

159. In section 3.2 of CMD 24-H2, CNSC staff submitted information on its public engagement with respect to the DNNP and the applicability of the EA to the selected BWRX-300 reactor technology. CNSC staff's engagement included several public information sessions, webinars and workshops. CNSC staff noted that it informed the public of the submission of OPG's PPE and EIS Review documents and invited comments on these documents from members of the public and stakeholders through the CNSC's online "Let's Talk Nuclear Safety" consultation platform. CNSC staff added that this opportunity was open from November 2022 to March 2023.

160. During its presentation (CMD 24-H2.A), CNSC staff provided information on the DNNP workshop held in April 2023 and some of the key issues identified, including:

- environmental effects and risks assessments
- waste management and decommissioning
- design, analysis and hazard assessment
- releases, doses and emergency management

In the supplementary CMD 24-H2.C, CNSC staff submitted the summary report from the DNNP workshop, noting that over 17 participants representing members of the public, Indigenous Nations and communities, civil society and environmental non-governmental organizations attended the workshop. The summary report also included copies of the comments and concerns received during the consultation period. CNSC staff submitted that it is exploring improvements to information transparency and will continue to provide updates on the project through the DNNP website and follow-ups with workshop participants, Indigenous Nations and communities, the public and stakeholders to discuss their concerns.

161. Information specific to OPG's and CNSC staff's engagement and consultation activities with Indigenous Nations and communities is summarized in section 3.4 of this *Record of Decision*.

162. Based on the information on the record as described above, the Commission concludes that comments from the public were adequately considered with respect to the DNNP Project. The Commission finds that:

- OPG made reasonable efforts to keep targeted audiences, including the public, Indigenous Nations and communities, and other interested parties, informed about the DNNP Project

- CNSC staff provided opportunities for the public, Indigenous Nations and communities, and government reviewers to participate in the review of the PPE and the EIS and their applicability to the DNNP EA Report

The Commission appreciates the valuable information provided by all.

3.3.5 Conclusions on the Applicability of the EA to the BWRX-300 Reactor

163. Based on the information on the record of this hearing, the Commission concludes that the BWRX-300 reactor design is not fundamentally different from the reactor technologies assessed in the EA. The Commission finds that the conclusions of the EA are bounding to OPG's chosen reactor technology for the DNNP, considering the implementation of proposed mitigation measures and follow-up environmental monitoring program. The Commission reasons as follows:

- the BWRX-300 reactor technology is based on the design of previous GEH boiling water reactors and uses light water as the coolant and moderator, similar to the pressurized water reactor assessed in the EA
- the BWRX-300 reactor fuel is similar in enrichment (5 wt%) and characteristics to the pressurized water reactor fuel assessed in the EA
- the physical design of the reactor core and the means of shutting down the nuclear reaction are similar to the pressurized water reactor assessed in the EA
- of the 198 PPE parameters, 60 no longer apply based on the choice of the reactor technology, 130 are within the bounds of the PPE and 8 are outside the bounds of the PPE but found to be bounded by the conclusions of the EA:
    - the increase in short-term withdrawal rate and the quantity of water stored for fire protection purposes do not introduce new environmental effects that cannot be mitigated
    - the reduction in wind load importance factor from 1.15 to 1.0 is independent of the reactor technology and does not introduce any new environmental effects that cannot be mitigated
    - the impact of the deeper embedment on environmental components such as groundwater flow, soil quality, dewatering, noise, volume of soil and rock removal, blasting and ground vibration, air quality, was adequately assessed and is bounded by the conclusions of the EA
    - the lower minimum release height above finished grade and the different activities per isotope of airborne releases result in estimated overall doses to the public of 0.0012 mSv, which are significantly below the regulatory dose limit of 1 mSv/year for a member of the public, thus bounded by the conclusions of the EA

- the activity by isotope of solid radioactive waste and the shipping cask weight do not introduce any new environmental effects that cannot be mitigated

164. The Commission reviewed and evaluated the BWRX-300 reactor technology and proposed mitigation and monitoring measures against the EA, and assessed, as directed by the Government Response, whether the proposed reactor technology is fundamentally different than the reactor technologies discussed in the EA. Based on its assessment, as discussed throughout section 3.3 of this *Record of Decision*, the Commission is satisfied that a new EA is not required. The Commission reasons as follows:

- the EA is robust and complete
- the BWRX-300 reactor technology is not fundamentally different than the technologies assessed in the EA and the conclusions of the EA bound the proposed reactor technology
- OPG has a monitoring and follow-up program in place, that is robust and adaptable to the BWRX-300 reactor technology
- the JRP recommendations directed to OPG are documented and managed by OPG through the DNNP Commitments Report, while all other recommendations are managed under the CNSC's regulatory program

3.4 Indigenous Engagement and Consultation

165. The common law duty to consult is grounded in the key principle of the honour of the Crown. The duty is engaged when the Crown contemplates conduct that may adversely affect established or potential Aboriginal and/or treaty rights of which the Crown has real or constructive knowledge.[86] The Commission acknowledges its obligation to fulfill the duty to consult and ensure that it considers impacts to Aboriginal and/or treaty rights, pursuant to section 35 of the *Constitution Act, 1982*[87] in the matter before it.

166. OPG's Darlington facility falls within the area of historic Southern Treaties (1764-1862) entered into following the *Royal Proclamation of 1763*.[88] These treaties include the Niagara Treaty (1764), the Treaty of Paris (1783), and the

[86] *Haida Nation*, *supra* note 9 at para 35.
[87] *Constitution Act*, *supra* note 15.
[88] On October 7, 1763, King George III issued a Royal Proclamation for the administration of British territories in North America, which set out the core elements of the relationship between First Nations and the Crown, established the recognition of First Nation rights in Canada, and laid the foundation of the treaty-making process and Canada's territorial evolution. Retrieved online from the Government of Canada website - Indigenous History in Canada - Royal Proclamation of 1763.

Upper Canada Treaties of 1764-1846. The most recent treaty agreement is the Williams Treaties, signed in 1923.

167. With respect to the Williams Treaties, in 2018, a Settlement Agreement was reached between the Crown and the Chippewa and Mississauga peoples who signed the Williams Treaties, providing recognition of pre-existing treaty harvesting rights in certain areas, financial compensation, potential for additional reserve lands, and apologies from Canada and Ontario for their narrow interpretation which denied Chippewa and Mississauga peoples of the rights solidified in the 1923 treaties.[89] The signatories to the Williams Treaties are:

- Alderville First Nation
- Curve Lake First Nation
- Hiawatha First Nation
- Mississaugas of Scugog Island First Nation
- Chippewas of Georgina Island First Nation
- Chippewas of Beausoleil First Nation
- Mnjikaming (Chippewas of Rama First Nation).

168. The CNSC's consultation process provides for Indigenous Nations and communities to:

- participate, receive, and assess project information
- apply for participant funding
- make submissions—both oral and written—about their concerns and how their concerns could be accommodated

In meeting its obligations towards Indigenous Nations and communities, the Commission may rely on steps and efforts undertaken by CNSC staff as well as the opportunities for Indigenous Nations and communities to make submissions directly to the Commission. While the Crown cannot delegate the duty to consult and is ultimately responsible for ensuring the discharge of the duty to consult, and where appropriate, accommodate, is fulfilled, the Commission may consider the consultation undertaken by OPG when determining whether consultation has been adequate.[90]

169. The Commission considered the information provided by CNSC staff and OPG regarding Indigenous consultation and engagement activities in respect of this matter and by Indigenous Nations and communities and their representatives

[89] Honourable Carolyn Bennett, Minister of Crown-Indigenous Relations on behalf of the Government of Canada *Statement of Apology for the Impacts of the 1923 Williams Treaties*, November 17, 2018, Rama, Ontario.
[90] Aboriginal Consultation and Accommodation - Updated Guidelines for Federal Officials to Fulfill the Duty to Consult - March 2011 and CNSC Regulatory Document, REGDOC-3.2.2, *Indigenous Engagement*, Version 1.2, February 2022.

about their impacted rights and interests. The Commission also considered the oral and written submissions of the Indigenous Nations and communities and their representatives provided in the context of the public hearing.

170. The Commission recognizes that all Indigenous Nations and communities participating in this matter have shared valuable time, energy, and knowledge with the Commission. The Commission has carefully considered the submissions and knowledge provided by the Indigenous Nations and communities with a view to understanding the issues and concerns as presented. The Commission sincerely appreciates the participation of the Indigenous Nations and communities.

171. The determination before the Commission is a narrow one. The Commission must determine:

i. if the BWRX-300 reactor technology chosen by OPG for the Darlington New Nuclear Project is fundamentally different from the specific reactor technologies assessed by the JRP, and
ii. if a new EA is required.

It is not a licensing decision under the NSCA and the validity of the EA has been confirmed by the FCA. If OPG continues to pursue the application for a licence to construct a BWRX-300 reactor at the Darlington site, the Commission will consider OPG's application in a future public hearing.

172. The Commission acknowledges that the above narrow determination still triggers the Crown's duty to consult, and where appropriate, to accommodate Indigenous interests where potential or established Aboriginal and/or treaty rights may be adversely affected. The Commission must be satisfied that the duty to consult is met prior to making its determination.

3.4.1 *Indigenous Consultation by CNSC Staff*

173. In section 3.1 of CMD 24-H2, CNSC staff submitted that the CNSC is committed to meaningful, ongoing engagement and consultation with Indigenous communities that have an interest in CNSC regulated facilities and activities. CNSC staff identified the following Indigenous Nations and communities who have Indigenous and/or Treaty rights in the area where the DNNP is proposed:

- Alderville First Nation
- Curve Lake First Nation (CLFN)
- Hiawatha First Nation
- Mississaugas of Scugog Island First Nation (MSIFN)
- Chippewas of Beausoleil First Nation

- Chippewas of Georgina Island First Nation
- Chippewas of Rama First Nation

CNSC staff also identified the following Indigenous Nations and communities as having expressed an interest in the DNNP:

- Saugeen Ojibway Nation (SON)
- Mohawks of the Bay of Quinte
- Métis Nation of Ontario
- Six Nations of the Grand River

174. In section 2 of the CMD 24-H2.B, CNSC staff reported having engaged with identified Indigenous Nations and communities on an ongoing basis since the start of the DNNP EA and regulatory process, including during the renewal of the LTPS in 2021, and the review process for and participation in this hearing. CNSC staff reported having Terms of Reference[91] in place for long-term engagement with several of the identified Indigenous Nations and communities, including with Hiawatha First Nation, CLFN, MSIFN, Métis Nation of Ontario and the SON.

175. CNSC staff also noted that, during the recurring meetings with identified and interested Indigenous Nations and communities, CNSC staff provided updates specific to the DNNP and reminders of upcoming engagement activities and contribution deadlines. CNSC staff also submitted that it had sent letters of notification and regular updates to all identified Indigenous Nations and communities keeping them informed with developments, including:

- OPG's intent and subsequent application for a licence to construct for DNNP
- availability of OPG's PPE and EIS Review reports for review and comment
- availability of participant funding to support review of OPG's and CNSC staff's CMDs and participation in this hearing

176. CNSC staff noted that it offered opportunities to meet directly with identified Indigenous Nations and communities to seek opportunities to understand what the potential impacts of the DNNP on Indigenous and/or treaty rights could be. CNSC staff submitted that a DNNP workshop was held on April 4, 2023 with Indigenous Nations and communities, members of the public, environmental non-governmental organizations, and stakeholders to discuss concerns related to the EIS Review and PPE reports.[92] In addition, CNSC staff held a webinar in June 2023, open to Indigenous Nations and communities, non-governmental organizations, and members of the public, to provide information on OPG's

[91] The Terms of Reference provide a forum for collaboration and a structure for regular meetings to address areas of interest regarding CNSC-regulated facilities and activities, including the DNNP.
[92] A summary of CNSC's staff DNNP workshop is found in CMD 24-H2.C.

licence to construct application, and an update on staff's technical review, including the review of OPG's EIS Review and PPE reports.

177. Asked by the Commission to elaborate on the consultation and engagement work carried out with Indigenous Nations and communities regarding the applicability of the EA to the chosen reactor technology, CNSC staff noted that the CNSC had provided participant funding specifically for the review of OPG's EIS Review and PPE reports, made both reports available to Indigenous Nations and communities and the public, and provided an opportunity, from November 2022 to March 2023, for Indigenous Nations and communities and the public to submit comments through the Let's Talk Nuclear platform. Further details on the participant funding offered for this hearing and the recipients can be found in section 1.0 of this *Record of Decision*. [93]

178. CNSC staff submitted that it received comments from the following Indigenous Nations and communities during the early-state review of the EIS and PPE documentation:

- CLFN
- Hiawatha First Nation
- MSIFN
- SON
- Métis Nation of Ontario
- Six Nations of the Grand River

CNSC staff added that tracked and provided written dispositions to all comments and concerns received and incorporated them, as applicable, into CNSC staff's review of the documents. CNSC staff also noted that it shared all comments received with OPG and encouraged OPG to have discussions regarding these comments with Indigenous Nations and communities.

179. At the Commission's direction, CNSC staff filed additional information, CMD 24-H2.B, on its Indigenous engagement and consultation activities between July 2023 to January 2024. The supplemental submission included further details on CNSC staff's Indigenous engagement and consultation activities, including:

- a summary of key correspondence with identified Indigenous Nations and communities from August 2023 to December 2023 (section 4 of CMD 24-H2.B)
- a description of key consultation and engagement activities with identified Indigenous Nations and communities since June 2023, summarized for each Indigenous Nation and community (MSIFN, CLFN, Hiawatha First Nation, SON, Chippewas of Georgina Island First Nation, Mohawks of the Bay of Quinte) (section 5 of CMD 24-H2.B)

[93] CNSC's Participant Funding Program, para. 12 of this *Record of Decision*.

- CNSC staff's commitments to addressing the issues and concerns raised by identified Indigenous Nations and communities in relation to the DNNP (section 6 of CMD 24-H2.B)
- further details on key themes and concerns raised by identified Indigenous Nations and communities (MSIFN, CLFN, Hiawatha First Nation, SON, Six Nations of the Grand River, Métis Nation of Ontario) related to the applicability of the EA to the chosen reactor technology (Appendix B of CMD 24-H2.B)
- CNSC staff's dispositions to the comments received from each identified Indigenous Nation and community (MSIFN, CLFN, Hiawatha First Nation, SON, Six Nations of the Grand River, Métis Nation of Ontario) (Appendix B of CMD 24-H2.B)

180. In section 5 of CMD 24-H2.B, CNSC staff summarized engagement activities with several Indigenous Nations and communities that did not participate in this hearing, but expressed interest in the DNNP:

- Chippewas of Georgina Island First Nation – applied for participant funding to attend the hearing in person as an observer to learn more about the process, met with CNSC staff to in January 2024 to discuss the role of the CNSC and the DNNP regulatory process, and requested quarterly meetings with CNSC staff moving forward.
- Mohawks of the Bay of Quinte – met with CNSC staff in October 2023 to discuss the regulatory review process, the role of the CNSC and opportunities to participate, and requested information and updates be provided via email unless indicated otherwise.
- Six Nations of the Grand River – submitted comments during the early-stage review of the EIS Review and PPE reports and attended the April 2023 DNNP public workshop, where their comments were also discussed.

3.4.2 *Indigenous Engagement by OPG*

181. The Commission examined the information submitted by OPG regarding its ongoing engagement with Indigenous Nations and communities near the proposed DNNP site (section 5 of CMD 24-H2.1). OPG noted that it engaged with the local rights holders of the Williams Treaties First Nations:

- Chippewas of Beausoleil First Nation
- Chippewas of Rama First Nation
- Chippewas of Georgina Island First Nation
- CLFN
- Hiawatha First Nation
- MSIFN

- Alderville First Nation

OPG also noted that it engaged with Indigenous Nations and communities that expressed interest in the DNNP, such as:

- Métis Nation of Ontario Region 8
- Kawartha Nishnawbe
- Six Nations of the Grand River
- Mohawks of the Bay of Quinte
- Huron-Wendat Nation
- SON

182. In its written submissions (CMD 24-H2.1 and CMD 24-H2.1B), OPG submitted a summary of its:

- Indigenous engagement on the EIS Review
- Indigenous engagement on other areas of interest to the Williams Treaties First Nations
- engagement activities between March 2023 and November 2023, which included discussions with representatives from the Williams Treaties First Nations to develop a scoping exercise for an Indigenous Knowledge Study

183. During its oral presentation (CMD 24-H2.1A), OPG noted its commitment to continued and strengthened reconciliation, enhanced by recent improvements in its internal capacity to support Indigenous engagement and consultation activities. OPG explained that, through the capacity growth, it was now offering a multi-tiered training program that focuses on treaty rights, the duty to consult, the *Indian Act*,[94] and how rights are protected, and was working on delivering in-depth training that demonstrates the cumulative impacts of the history experienced in Indigenous Nations and communities. OPG also expressed its commitment to continuing to grow the relationship with First Nations and working together to integrate the Rightsholder's view into OPG projects as early as possible, through the planning and implementation phases. The Commission looks forward to receiving updates, as applicable, on OPG's capacity growth with respect to Indigenous engagement during the licence to construct hearing, should it proceed.

184. At the direction of the Commission, OPG filed an updated Indigenous Engagement Report for the Darlington New Nuclear Project (March 2023 to November 2023) (CMD 24-H2.1B).

[94] R.S.C. 1985, c. I-5.

3.4.3 *Submissions by Indigenous Nations and Communities*

185. The Commission received the written submissions from the following Indigenous Nations, communities, and organizations:

- Hiawatha First Nation (CMD 24-H2.23, CMD 24-H2.23A)
- CLFN (CMD 24-H2.25, CMD 24-H2.25A)
- MSIFN (CMD 24-H2.26, CMD 24-H2.26A)
- Métis Nation of Ontario (CMD 24-H2.34)
- SON (CMD 24-H2.22)

The Hiawatha First Nation, CLFN, the MSIFN and the SON also made oral interventions.

3.4.3.1 Hiawatha First Nation and Curve Lake First Nation

186. In their written and oral interventions (CMD 24-H2.23, CMD 24-H2.23A, CMD 24-H2.25, CMD 24-H2.25A), Hiawatha First Nation and CLFN[95] submitted their outstanding concerns, including:

- overall impacts of DNNP to the rights of Michi Saagiig Anishinaabeg which include, but are not limited to impacts to fishing, hunting and harvesting, spiritual landscapes and species and places of cultural significance
- insufficient information on how CNSC and OPG have meaningfully considered, consulted and accommodated impacts to Hiawatha First Nation and CLFN rights
- consideration should be given to the United Nations principles of free, prior and informed consent (FPIC)
- concerns regarding the use of most protective and relevant assessment standards, including the applicability of the IAA to the DNNP
- a detailed gap analysis considering the discrepancies between CEAA 1992 and current legislature, to support a deeper understanding of the DNNP and its impacts to the baseline environmental conditions and potential affects to Michi Saagiig Rights
- assessment of cumulative effects by looking at the project holistically and understanding the legacy impacts of the existing NGS
- carbon impact of the project and material to be used in the construction of the DNNP reactor

[95] Submissions for Hiawatha First Nation and CLFN have been grouped as their submissions were nearly identical, authored by the same consultant. The two Nations are also referenced together in CNSC staff's engagement report since their activities and monthly meetings are between the CNSC and the two Nations combined, as per the Terms of Reference for long-term engagement with each Nation.

187. During the oral presentation,[96] Hiawatha First Nation expressed the view that "since 2019, CNSC and OPG have been sharing information with [Mississaugas of] Scugog [Island], Curve Lake and Hiawatha regarding the Darlington New Nuclear Project. However, in [their] view, meaningful consultation has not occurred."[97] The representative added that "in fact, the Darlington New Nuclear Project was originally assessed and approved without consideration for the protection of [their] rights and without adequate consultation. It was assessed under federal legislation which is over 20 years old and is not consistent with the current federal impact assessment standards. The Darlington New Nuclear Project was assessed prior to the Williams Treaties First Nations Settlement Agreement in 2018, which is significant as the Settlement Agreement recognized and reinstated our rights which had otherwise been denied to us for over 75 years."[98]

188. In their written and oral interventions, Hiawatha First Nation and CLFN recommended that, as accommodation, the Commission ensure that OPG and CNSC work collaboratively with their Nations to:

- "co-develop [a] rights-based analysis that is inclusive of Indigenous Knowledge and understanding of cumulative effects and utilizes the highest standards of environmental protection"[99]
- complete "an environmental rights impact assessment that is informed by a territorial Indigenous knowledge study, a comprehensive cumulative impacts assessment and rights-based requirements, needs and improvements, including rights-informed approaches to mitigation, compensation and restoration"[100]

189. During the oral presentation, Hiawatha First Nation, CLFN and MSIFN noted that "the [accommodations] have been discussed with OPG at various meeting. … The Nations understand that there is support for the efforts, and in listening to OPG's presentation, there is close alignment to what the next steps are. The Nations are equally optimistic CNSC has consistently expressed over the last few years support for an Indigenous Knowledge study. There have been discussions to work collaboratively on each Nations' respective work plan and interactions under their respective work plan and interactions under their respective Terms of References with the CNSC. These actions are progressive and will inform a more comprehensive rights impact assessment."[101]

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[96] Hiawatha First Nation, Curve Lake First Nation and MSIFN are part of the Williams Treaties First Nations. For this hearing, they submitted individual written interventions and did a joint oral intervention, with representatives from each First Nation presenting in front of the Commission. Therefore, the Commission questions summarized in section 3.4.3.1 also apply to section 3.4.3.2.
[97] Transcript, January 23, 2024, page 87.
[98] Transcript, January 23, 2024, page 88.
[99] Transcript, January 23, 2023, pages 89-90.
[100] Transcript, January 23, 2024, pages 92-93.
[101] Transcript, January 23, 2024, pages 107-108.

190. In section 5.1 of CMD 24-H2.B CNSC staff reported on the monthly meetings and discussions with Hiawatha First Nation and CLFN regarding the Nations' concerns with the potential impacts of the DNNP on their rights and interests. CNSC staff submitted that it offered to have DNNP-specific meetings with Hiawatha First Nation and CNLFN to discuss the First Nations' comments on OPG's EIS Review and PPE reports. CNSC staff noted its support of funding opportunities towards the completion of the Williams Treaties First Nations Indigenous Knowledge and Land Use study, which can help inform an adaptive management approach to OPG's EA follow-up and monitoring program, should the Project proceed to a licence to construct hearing. CNSC staff further submitted that it is monitoring OPG's progress with respect to the requested study and assessments, as per requirements of REGDOC-3.2.2, *Indigenous Engagement*.[102]

Discussion

191. The Commission asked OPG and CNSC staff to comment on the various studies and assessments requested by the Hiawatha First Nation and CLFN. A representative from OPG noted that it committed resources to undertake a scoping exercise in early 2024, in collaboration with various Indigenous Nations and communities, to support an Indigenous Knowledge study. The OPG representative added that the study would include:

- opportunities to identify how to increase protection measures in the area of environmental protection
- overall impacts of the nuclear sector in the Williams Treaties First Nation area
- Rights Impact Assessment planning
- priority mapping

The OPG representative explained that OPG planned to start the Indigenous Knowledge study in the fall of 2024, once the scoping exercise is completed. Regarding the Rights Impact Assessment, the OPG representative noted that OPG has initiated dialogue with the Indigenous Nations on this topic and is committed to understanding the rights that may be impacted. Further information on the comprehensive cumulative effects assessment is summarized in section 3.3.3.1.6 Cumulative Environmental Effects of this *Record of Decision*.

192. CNSC staff also commented on the topic of the requested study and assessments, noting that the CNSC has long-standing relationship agreements with the Williams Treaties First Nations. CNSC staff added that these topics

[102] CNSC Regulatory Document, REGDOC-3.2.2, *Indigenous Engagement*, Version 1.2, February 2022.

have been integrated in the monthly meetings and work plans already in place. Regarding the Indigenous Knowledge and land use study, CNSC staff explained that "CNSC staff have been looking to support [this study] for many years. … It is a complex file because there are seven different First Nations that make up the Williams Treaty First Nations, covering a vast territory and many different nuclear facilities and activities. But now there is a commitment and focus from all parties, … and starting with a focus on the DNNP, the Darlington site specifically and potential interactions and then expanding that further to the rest of the territory and other files that [CNSC staff] has been working with the communities on."[103] CNSC staff also noted its commitment, alongside OPG, to support the gathering of Indigenous Knowledge and land use information and data, and reiterated that OPG is required to have an EA follow-up monitoring program and has committed to incorporating Indigenous Knowledge and land use information in it.

193. In terms of the Rights Impact Assessment, CNSC staff noted that it is an analytical tool: "It is a report, a summary report to help inform the Commission in [its] decision making on discharging the duty to consult and accommodate for licence applications. … This is something as part of our commitment to modernize the approach to consultation, because … things have changed in the decade since the Environmental Assessment."[104] CNSC staff reiterated its commitment to work collaboratively with the Indigenous Nations and communities and support activities related to the development of the study and assessments requested.

3.4.3.2 Mississaugas of Scugog Island First Nation

194. In its written and oral intervention (CMD 24-H2.26, CMD 24-H2.26A), the MSIFN submitted its outstanding concerns regarding the potential impacts of the DNNP on its lands and people, including:

- the project's potential contributions to or mitigations of climate change
- need for a uniform approach in a contemporary EA follow-up and monitoring process
- the changes between the EA and the IAA requirements
- a detailed gap analysis considering the discrepancies between CEAA 1992 and current legislation
- the absence of a long-term plan for the management and storage of nuclear waste in Ontario
- adherence to the United Nations principles of FPIC since the Nations were not consulted by OPG or CNSC during early DNNP phases

[103] Transcript, January 25, 2024, page 55.
[104] Transcript, January 25, 2024, page 57.

- the evaluation of risks associated with multi-unit SMRs, cross-unit climate-related risks and interactions with existing facilities on the Darlington Nuclear site

195. In sections 1.2 and 2.1 of CMD 24-H2.26, the MSIFN also noted its concerns that they were not meaningfully consulted on the DNNP, the existing "Darlington Nuclear Generating Station, the Darlington Waste Management Facility and future on-site storage of nuclear waste at the Darlington site." The MSIFN submitted that they did not receive participant funding from CEAA to participate in the environmental assessment and related consultation activities, and that consultation appears to have been limited to the distribution of letters and documents.

196. During the oral intervention, the MSIFN expressed concern about the impact of the DNNP on their territory and people, stating that "[n]uclear activities and operations in our territory began and continue without our consent, and decisions were made as part of these activities which have irreparably altered the landscape and waters and have had direct impacts on our ability to hunt, fish, harvest, and practise our culture and spirituality within our territory. These facilities have operated in [Mississaugas of] Scugog [Island]'s First Nation's backyard for decades, with little consideration as to how this would impact the culture, health, and traditions of our people." [105] The MSFIN recommends, as an accommodation, that the Commission "require CNSC and OPG to work collaboratively with [their] Nations and develop and undertake a cumulative effects assessment as part of an EA follow-up program."[106]

197. The MSIFN also noted during the oral intervention that the studies and analyses requested "will take a significant amount of time and resources from all parties, [Missisaugas of] Scugog Island [First Nation], Curve Lake [First Nation] and Hiawatha [First Nation] are prepared to discuss with the CNSC a framework for a preliminary review of the Treaties, First Nation regulation and rights impacts, acknowledging that such a review cannot identify impacts to [their] rights at this immediate point in time. A necessary condition of such an undertaking is a firm commitment from the CNSC and OPG to support our Nations to undertake a co-developed and comprehensive rights impact assessment. We are of the view that we can reach an agreement with the CNSC and OPG to take the care and time to conduct an appropriate rights impact assessment in conjunction with the EA follow-up program that we have proposed."[107]

198. In section 5.2 of CMD 24-H2.B, CNSC staff submitted that it had met several times with the MSIFN, including an in-person meeting in the community, to discuss the DNNP and their concerns about the Rights Impact Assessment

[105] Transcript, January 23, 2024, page 103.
[106] Transcript, January 23, 2024, page 103.
[107] Transcript, January 23, 2024, pages 97-98.

process, consent, and the environmental monitoring and follow-up program. CNSC staff also noted that, following the April 2023 DNNP public workshop, CNSC staff offered to meet directly with the MSIFN to discuss their comments on OPG's EIS Review and PPE reports, and, as requested by the First Nation, CNSC staff provided written responses to their comments. Regarding the Rights Impact Assessment framework, CNSC staff noted that it received and addressed comments and concerns from the MSIFN and offered to continue the discussion and collaboration with the Nation on this topic. CNSC staff also noted its support of funding opportunities towards the completion of the Williams Treaties First Nations Indigenous Knowledge and Land Use study, which can help inform an adaptive management approach to OPG's EA follow-up and monitoring program, should the Project proceed to a licence to construct hearing. CNSC staff further submitted that it is monitoring OPG's progress with respect to the requested study and assessments, as per requirements of REGDOC-3.2.2, *Indigenous Engagement*.

Discussion

199. During the oral intervention, the MSIFN expressed concerns regarding OPG's mention during meetings with the First Nation of an increase in the soil spoils pile and its potential impact on endangered species. Asked by the Commission to comment on OPG's approach to manage the increase of soil spoils piles, OPG noted that various options were investigated - some that would impact areas set aside for beneficial actions and some that would not. The OPG representative explained that, after consultation with the First Nations, OPG was proceeding with a spoil pile design that would not impact existing beneficial areas for species at risk habitats.

200. Asked by the Commission to comment on whether the MSIFN, CLFN and Hiawatha First Nation would actively participate in the development and implementation of the EA follow-up program, an OPG representative responded that OPG had been involving Williams Treaties First Nations in both environmental monitoring work as well as the EA follow-up plan.[108] The OPG representative added that, in addition to that plan, OPG has several individual monitoring plans for specific environment-component-focused methodologies (e.g., for monarch butterfly habitat) which have been shared and discussed with the Williams Treaties First Nations.

201. With respect to the potential risks to lands and waters, the Commission asked OPG to comment on the storage of used nuclear fuel at the DNNP site, when compared to international as well as OPG's current practices. An OPG

[108] As explained by OPG on record on January 23, 2024, Transcript, page 110, the EA follow-up plan is a document summarizing all the activities that will be undertaken by OPG as part of the follow-up monitoring required for DNNP.

representative noted that storage of BWRX-300 spent fuel would be similar to that of CANDU spent fuel, and that OPG has policies in place to ensure it meets regulatory requirements. The OPG representative added that, from an EA review perspective, the weight of the spent fuel cask was the bounding scenario, and one BWRX-300 reactor unit would generate approximately 24 to 27 casks over its entire 60-year operating life. The OPG representative also noted OPG's practices, which include storage of spent fuel, align well with international best practices, as demonstrated through:

- periodic benchmarking activities against industry peers, carried out through the World Association of Nuclear Operators (WANO) operational review
- annual review of best practices in storage of spent fuel, carried out through the International Atomic Energy Agency (IAEA)

3.4.3.3 Métis Nation of Ontario

202. In its written intervention (CMD 24-H2.34), the Métis Nation of Ontario submitted concerns regarding the impact of the DNNP on the environment and provided comments on the applicability of the EA to the chosen reactor technology. These concerns included:

- unavailability of OPG supporting documents regarding environmental impacts such as ponds, wetland and fish, needed to determine the full impact of the DNNP on the Métis Nation of Ontario Region 8
- impact on the bank swallow nesting habitat
- information on mitigation measures implemented to retain terrestrial habitats,[109] type of terrestrial habitats that may be retained and the wildlife supported by the terrestrial habitats
- the impact on socio-economic benefits considering the decrease in workforce from what was estimated in the EA
- climate change and OPG's contingency plan for the construction, operation and decommissioning Project phases, to account for uncertainties associated with flooding and other extreme weather hazards

203. The Métis Nation of Ontario recommended that, as accommodation, OPG should carry out additional engagement with them, including the review of measures to offset the loss of bank swallows nesting habitat and involvement in OPG's EA follow-up and monitoring plan.

[109] The smaller footprint for the BWRX-300 reactor technology may provide OPG with an opportunity to retain some terrestrial habitats on the DNNP site (section 3.6.2 of OPG EIS Review, *supra* note 20).

Discussion

204. During the hearing, the Commission considered the Métis Nation of Ontario's submission, as well as those of other intervenors that raised similar concerns regarding impact on the bank swallow nesting habitat, retaining terrestrial habitats, climate change, and socio-economic benefits, and sought clarifications and further information from OPG and CNSC staff on these issues. These issues are addressed throughout section 3.3.3 of this *Record of Decision*.

3.4.3.4 Saugeen Ojibway Nation

205. In its written and oral intervention (CMD 24-H2.22), the Saugeen Ojibway Nation (SON) outlined its outstanding concerns related to potential impacts of the DNNP, which included:

- offsite transportation and storage of spent nuclear fuel from the DNNP reactors
- potential storage of low-level and intermediate-level waste from the DNNP reactors at the Western Waste Management Facility, which is located on SON territory
- implications of DNNP to being the first grid scale SMR in Canada
- CNSC's approach to regulating SMRs
- commitment to reconciliation
- applicability of the IAA to the DNNP
- regional and strategic assessments under the IAA for SMR deployment in Canada
- the historical lack of consent and application of FPIC principle for waste management at the Western Waste Management Facility, on SON territory

206. In section 5.4 of CMD 24-H2.B, CNSC staff noted that SON had raised the concerns in April 2023, and that CNSC staff had provided a written response to these concerns, outlining the regulatory requirements and the CNSC's position on each comment and concern. CNSC staff also submitted that it offered to meet and discuss these concerns further as part of the SON-CNSC staff monthly meetings, as per the Terms of Reference for long-term engagement. Furthermore, CNSC staff expressed its commitment to continuing to follow up and work with SON to address their concerns and comments.

Discussion

207. The Commission asked OPG and CNSC staff to comment on SON's concerns regarding the transportation of waste to the Western Waste Management Facility as it relates to the EA. A representative from OPG noted that OPG was

working on identifying options for the interim storage of low- and intermediate-level waste, that are consistent with the EA. The OPG representative added that during the EIS Review, OPG confirmed that interim storage of the BWRX-300 low- and intermediate-level waste would not alter the conclusions of the EA. CNSC staff explained that, with respect to waste management and decommissioning, different requirements apply to different licensing phases, and that OPG would need to demonstrate compliance at every stage. CNSC staff also confirmed that, for the current determination regarding the EA applicability, the BWRX-300 does not change any of the EA conclusions. In the EA Report, the JRP states that "provisions should be made for on-site storage of the used nuclear fuel for a longer period than is anticipated by the proponent. … The proponent should be required to demonstrate a capacity to store all [low-level, intermediate-level and high-level waste] on site over the life of the Project."[110] The Panel issued two recommendations, #52 and #53, requiring OPG to make provisions for on-site storage of all spent fuel for the duration of Project. These recommendations are tracked as part of the OPG DNNP Commitments Report.[111]

208. Regarding OPG's plans for the management of radioactive waste, a representative from OPG explained that from an interim perspective, OPG was responsible for managing low-level, intermediate-level and high-level waste (i.e., used nuclear fuel). From a long-term perspective, the OPG representative noted that waste generators were responsible for a long-term strategy for low-level waste and that the Nuclear Waste Management Organization (NWMO) will be responsible for the intermediate-level and high-level waste. The OPG representative noted that this approach was consistent with Natural Resources *Canada's Policy for Radioactive Waste and Decommissioning*,[112] which was released in March 2023, and the *Integrated Strategy for Canada's Radioactive Waste*,[113] which was released in October 2023. The OPG representative further noted that OPG was working with NWMO to provide the details required to accommodate the design of spent fuel from the BWRX-300 reactor. In line with the JRP recommendations #52 and #53, long-term management of radioactive waste is outside the scope of the Commission's decision for the current matter.

209. The topics of low-, intermediate- and high-level waste characteristics and how management of waste types from the BWRX-300 reactor might differ from what was assessed in the EA are further discussed in sections 3.3.1 and 3.3.2 of this *Record of Decision*.

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[110] JRP EA Report, *supra* note 4.
[111] CNSC staff CMD, CMD 24-H2, *supra* note 74.
[112] Natural Resources Canada, *Canada's Policy for Radioactive Waste Management and Decommissioning*, 2023.
[113] Nuclear Waste Management Organization, *Integrated Strategy for Radioactive Waste*, Report submitted to Canada's Minister of Natural Resources, June 2023.

210. Under the IAA, the Minister of the Environment may establish a committee, or authorize the Impact Assessment Agency of Canada, to conduct regional and strategic assessments, as described in the legislation. In December of 2023, SON wrote to the Minister of the Environment requesting both a strategic assessment and a regional assessment regarding the planned development and deployment of a small modular reactor industry in Canada. As of the writing of this decision, no decision of the Minister on this request has been made public. The Commission's obligation to determine the applicability of the EA to the chosen technology in this matter is separate and distinct from the request put forward by SON to the Minister, and any impending decision by the Minister in relation to that request does not, and should not, affect the determination being made by the Commission.

211. As a waste owner, OPG is responsible for developing and implementing solutions to safely and securely manage its waste. It is the Commission's expectation that OPG will work collaboratively with potentially impacted Indigenous Nations and communities, including SON, in developing and implementing any such solutions, in accordance with applicable regulatory requirements.

3.4.3.5 Conclusion on Submissions by Indigenous Nations and Communities

212. The Commission thanks Hiawatha First Nation, CLFN, MSIFN, Métis Nation of Ontario and SON for their participation in the hearing, and for helping build a robust hearing record that informed the Commission's recommendations and decisions. The Commission values the participation, knowledge and information that the Indigenous Nations and communities brought to the hearing process.

213. The Commission acknowledges the complexity of the issues raised by the Indigenous Nations and communities. The Commission also acknowledges the collaborative efforts that OPG, CNSC staff and the Williams Treaties First Nations have initiated with respect to the commencement of the studies discussed throughout this section. The Commission heard the relevant issues and concerns brought forward by Hiawatha First Nation, CLFN and MSIFN, and considered them with the intent that these issues and concerns are mitigated or, where necessary, accommodated.

214. If OPG elects to proceed with the Project, there will be a continued obligation on the CNSC to hear and understand the perspectives and concerns of Indigenous Nations and communities. OPG has acknowledged the need for, and committed itself to undertaking, studies that will inform the Project moving forward. The information that will be gathered in the studies OPG has

committed to undertaking can help to inform the Commission's decision-making as the Project progresses.

215. The Commission therefore expects OPG to:

- work collaboratively with interested Williams Treaties First Nations to scope out the extent, timing and content of the following study and assessment:
  - Rights Impact Assessment
  - Indigenous Knowledge study
- work collaboratively with Williams Treaties First Nations to scope out the extent, timing and content of an updated Cumulative Impacts Assessment
- consider best practices and standards when scoping and undertaking the above-noted study and assessments
- produce an up-to-date engagement report, to be filed on the record of the public hearing regarding the licence to construct (LTC) application, including status updates regarding progress in relation to the study and assessments

216. The Commission directs CNSC staff to:

- support OPG's collaborative work on the following study and assessments:
  - Rights Impact Assessment
  - Indigenous Knowledge study
  - Cumulative Impacts Assessment
- produce an up-to-date consultation report, to be filed on the record of the public hearing regarding the LTC application

217. The Commission also recommends that in the OPG development and implementation of its EA follow-up program, OPG incorporate, to the extent possible, engagement with the Williams Treaties First Nations and the Métis Nation of Ontario on applicable items (e.g., measures to offset the loss of bank swallows nesting habitat), Indigenous Knowledge, and land use information and data in the program. The Commission expects that CNSC staff continues to support the Williams Treaties First Nations to gather traditional Indigenous Knowledge and land use information and data.

3.4.4 *Engagement and Consultation during the EA*

218. Several Indigenous Nations and communities including Hiawatha First Nation, CLFN, the MSIFN, and SON indicated that adequate consultation did not occur with respect to the Darlington New Nuclear Project EA (see section 3.4.3 of this *Record of Decision*). The Commission also recognizes that consultation and

engagement requirements and expectations have evolved since the EA was conducted, including the Government of Canada's commitment to reconciliation.

219. The task for the Commission in this determination is not to reassess the EA, or the adequacy of the EA, and this includes Indigenous consultation. When the EA was conducted, conclusions were drawn on the assessment and a licence issued on the basis that the duty to consult had been adequately discharged. It is not the task of the Commission to reassess this conclusion.

220. As explained by the SCC, the duty to consult is intended to address current activities and the potential impacts that may flow from a currently proposed project or change or expansion of a project. As stated in *Chippewas:* "The subject of the consultation is the impact on the claimed rights of the *current* decision under consideration."[114] Consistent with the *Chippewas* decision, the Commission is of the view that the determination on this matter is not the forum for addressing historical grievances or to redress past wrongs. The Commission recognizes, however, that it is important for the Commission to understand this historical context which should inform the scope of the duty to consult.[115] To that end, the Commission has considered the information provided by Indigenous Nations and communities, OPG and CNSC staff regarding the consultation activities that took place during the EA.

221. Participant funding provided by the CEAA for the EA is summarized in the EA Report, in section 1.4. As noted in the EA, participant funding was allocated and provided as follows:

- on April 1, 2008, $75,000 to facilitate participation of eligible groups and individuals in the review of the draft EIS Guidelines and the draft Joint Review Panel Agreement
- on June 9, 2008, $100,000 to facilitate Aboriginal participation in the EA and related consultation activities
- on June 19, 2009, $150,000 to support public participation in the Project review, including review of the EIS and preparation for and participation in the public hearing conducted by the JRP

222. In Appendix B of CMD 24-H2.B, CNSC staff submitted that starting in 2007 and throughout the EA process for the DNNP, both the CNSC and CEAA consulted with potentially impacted or interested Indigenous Nations and communities, including the Williams Treaties First Nations. CNSC staff noted that consultation efforts during this process included letters, emails, telephone calls, and meetings at key Project stages, including an invitation to review and

[114] Chippewas, *supra* note 85, para 41 citing *Rio Tinto Alcan Inc. v. Carrier Sekani Tribal Council*, 2010 SCC 43, at para. 53.
[115] *Ibid.*, para. 41 and 42.

provide comments on OPG's EA and licence to prepare site application in 2009, as well as opportunities to apply for funding through CEAA's Participant Funding Program. CNSC staff also noted that CNSC and CEAA staff provided many opportunities for Indigenous Nations and communities to submit comments on the Project and discuss potential concerns, including any potential impact on rights. CNSC staff submitted that it encouraged Indigenous Nations and communities to submit information to the JRP and to participate in the public hearings.

223. In the supplemental submission (CMD 24-H2.B), CNSC staff noted that all potentially impacted or interested Indigenous Nations and communities, including MSIFN, were provided with the opportunity to apply for funding to support participation in the EA. CNSC staff added that it "had multiple phone calls with MSIFN and discussed the funding opportunities available. When the funding deadline passed, CNSC staff followed up and talked to MSIFN representatives offering an extension, however MSIFN did not end up applying for funding. Similarly, although opportunities were provided to MSIFN to comment on the project, the EA and LTPS application, no comments were received from MSIFN at the time."[116]

3.4.5 *Changing Context: Application of UN Declaration, UNDA and Reconciliation to this matter*

224. The *United Nations Declaration on the Rights of Indigenous Peoples Act* (UNDA) came into force in Canada on June 21, 2021. The Government of Canada has clarified that "[t]he Act itself does not immediately change Canada's existing duty to consult Indigenous groups."[117] Nonetheless, the Commission acknowledges that its commitment to Reconciliation, the UN Declaration, and section 35, including the Crown's duty to consult and accommodate, have aspects that intersect and that this is an evolving area of law. The Commission also acknowledges the need to consider the *Principles Respecting the Government of Canada's Relationship with Indigenous Peoples*.[118]

225. The statutory obligation to consult and cooperate in section 5 of UNDA is distinct from the constitutional duty to consult. The Government of Canada has a constitutional duty to consult Indigenous peoples when it considers measures that might adversely impact their potential or established Aboriginal or treaty

[116] CMD 24-H2.B, Appendix B, ID # MSIFN #9, pages 15-16.
[117] Department of Justice Canada, *Implementing the United Nations Declaration on the Rights of Indigenous Peoples Act, About the Act*, retrieved from the Department of Justice – Government of Canada's website: https://www.justice.gc.ca/eng/declaration/legislation.html, March 6, 2024.
[118] Department of Justice Canada, *Principles Respecting the Government of Canada's Relationship with Indigenous Peoples*, 2018.

rights. The Commission recognizes the identified Indigenous Nations and communities' section 35 rights and the Crown's duty to consult on this matter. At all stages of the hearing process and during its review of this matter, the Commission recognizes the need to uphold the honour of the Crown.

226. The Government of Canada has indicated the implementation of the UN Declaration through UNDA will inform how the Government approaches meeting its legal duties going forward.[119] The Commission also acknowledges, as OPG did during the oral hearing, that in light of the Williams Treaties First Nations 2018 settlement agreement, an assessment of the impact of the Darlington New Nuclear Project on their Indigenous and treaty rights must be commenced.

227. Some of the Indigenous Nations and communities indicated that they were not meaningfully consulted during the EA process (section 3.4.4 of this *Record of Decision*), and the WTFN indicated during the oral hearing they were never consulted during the initial decision-making processes on the EA for the establishment and operation of the Darlington NGS. The SCC has stated that "[t]he duty to consult is not triggered by historical impacts. It is not the vehicle to address historical grievances."[120] However, as stated before in this *Record of Decision*, it is important for the Commission to understand this historical context, which should inform the scope of the duty to consult.

228. The Commission also heard submissions from Indigenous Nations and communities with respect to the application of FPIC as set out in above in section 3.4.3 of this *Record of Decision*. References to "free, prior and informed consent" (FPIC) are found throughout the UN Declaration, including at Article 32. The Government of Canada explains:

> … FPIC describes processes that are free from manipulation or coercion, informed by adequate and timely information, and occur sufficiently prior to a decision so that Indigenous rights and interests can be incorporated or addressed effectively as part of the decision-making process - all as part of meaningfully aiming to secure the consent of affected Indigenous peoples.[121]

229. The specific application and requirements of FPIC will vary depending on the matter being assessed. On this determination, which is not an approval of a project, the Commission heard statements from CLFN and Hiawatha Nation that there is close alignment with OPG on what next steps are needed from the

[119] Department of Justice Canada, *Backgrounder: United Nations Declaration on the Rights of Indigenous Peoples Act*, retrieved from the Department of Justice – Government of Canada website: https://www.justice.gc.ca/eng/declaration/about-apropos.html, March 6, 2024.
[120] Chippewas, *supra* note 85 at para 41.
[121] Department of Justice Canada, Backgrounder*, supra* note 119.

First Nations' perspectives. Hiawatha First Nation also indicated that, "despite [their] concerns and in the spirit of reconciliation and in good faith, [they] will present to the Commission ways in which [they] as sovereign rights holders in this territory seek accommodation for the oversight of the Crown so as to allow the regulatory process to proceed."[122] The Commission heard a similar submission from MSIFN that "[they] appreciate that these studies and analysis will take a significant amount of time and resources from all parties. … A necessary condition of such an undertaking is a firm commitment from the CNSC and OPG to support our Nations to undertake a co-developed and comprehensive rights impact assessment. We are of the view that we can reach an agreement with the CNSC and OPG to take the care and time to conduct an appropriate rights impact assessment in conjunction with the EA follow-up program that [they] have proposed."[123]

230. The Commission also heard statements from SON regarding FPIC for waste management at the Western Waste Management Facility on SON territory. The Commission acknowledges SON's concerns and notes that management of radioactive waste outside the DNNP site is outside the scope of this hearing. As noted in the EA recommendations, OPG is required to make provisions for on-site storage of all nuclear waste for the duration of the Project.

231. The Commission has assessed the duty to consult and accommodate in relation to the question it must address as a result of the Government Response to the JRP EA Report with respect to "fundamental difference" and the need for a new EA, and this assessment has taken place within the context of and with acknowledgement of UNDA.

3.4.6 *Issues outside the scope of the determination of the applicability of EA to BWRX-300 reactor technology*

232. The Commission heard submissions from Indigenous Nations and communities and requests for accommodation that were not applicable to this determination. These include:

- a carbon impact of the Project and material to be used in the construction of the DNNP reactor
- a request for OPG to establish an offsite restoration fund to be used by Williams Treaties First Nations to offset some of the Project impacts on their territory and rights
- a long-term plan for the management and storage of nuclear waste in Ontario

[122] Transcript, January 23, 2024, page 86.
[123] Transcript, January 23, 2024, page 98.

- an evaluation of risks associated with multi-unit SMRs, cross-unit climate related risks and interactions with existing facilities on the Darlington Nuclear site
- FPIC for waste management at the Western Waste Management Facility
- requests for OPG working with identified Indigenous Nations and communities on applicable federal and provincial permits

Some of these issues, for example, the desire for a long-term plan for the management and storage of nuclear waste in Ontario, are not within the authority of the Commission under the NSCA. However, some of these issues may become relevant and applicable should OPG elect to proceed with the DNNP. The Commission encourages OPG and CNSC staff to engage with the Indigenous Nations and communities raising these concerns to understand the concerns and how they might be addressed moving forward, and at a future Commission proceeding.

3.4.7 *Conclusions on Indigenous Engagement and Consultation*

233. The common law duty to consult with Indigenous Nations and communities is engaged when the Crown contemplates conduct that may adversely affect established or potential Aboriginal and/or treaty rights. The Commission acknowledges its obligation to fulfill the duty to consult and ensure that it considers impacts to Aboriginal and/or treaty rights, pursuant to section 35 of the *Constitution Act, 1982* in the matter before it. The duty to consult must be satisfied before the Commission can make its determinations directed by the Government of Canada's response to the JRP Recommendation #1. The duty, an obligation rooted in the honour of the Crown, has both "informational and response components" [124] requiring government to listen to the views and concerns about potential impacts of government decision making on Aboriginal and treaty rights, and where necessary and possible, modify the action or decision to avoid or minimize infringement of those rights. The duty does not direct a specific outcome; rather, it requires a process of give and take that at least leads to a "mutual understanding of the core issues – the potential impact on Aboriginal or treaty right, and possible accommodations" [125] and to balancing "competing societal interests with Aboriginal and treaty rights."[126]

234. Indigenous Nations and communities had the opportunity to file written submissions and provide oral submissions to be heard during the hearing process. Indigenous consultation activities undertaken by CNSC staff, engagement activities undertaken by OPG, and direct engagement with

[124] *Roseau River First Nation* v. *Attorney General of Canada, Canadian Energy Regulator and Manitoba Hydro*, 2023 FCA 163, para 28.
[125] *Clyde River (Hamlet) v. Petroleum Geo-Services Inc*., 2017 SCC 40, at para 49.
[126] Chippewas, *supra* note 85 at para 59.

Indigenous Nations and communities on the part of the Commission during the public hearing, all provided opportunities for learning about the Indigenous rights held and asserted in the area surrounding the proposed DNNP site and the views of Indigenous Nations and communities about what impacts this determination - on whether (i) the BWRX-300 reactor technology is fundamentally different from the specific reactor technologies assessed in the EA and (ii) a new EA is required - could have on those rights.

235. The Commission heard that Indigenous Nations and communities had the opportunity to provide comments on the key documents for this determination. CNSC staff made documentation and reports related to the DNNP, including OPG's EIS Review Report and PPE documents and CNSC staff's CMD available for review and comment. In addition, CNSC staff tracked, responded to, and considered all issues, concerns and comments raised by Indigenous Nations and communities in CNSC staff's review process of OPG's documentation. In CMD 24-H2.B, CNSC staff noted that all comments received were also shared with OPG, and OPG was encouraged to have discussions regarding these comments with Indigenous Nations and communities. In its presentation, OPG noted that DNNP general information on the EA and EIS Review was provided to the Williams Treaties First Nations and the Métis Nation of Ontario Region 8 and comments on the draft EIS Review were received from CLFN and MSIFN. OPG noted it held follow up meetings with these First Nations to discuss their comments and dispositioned their comments, making revisions where appropriate.[127]

236. Participant funding, as discussed in section 1.0 of this *Record of Decision,* was also provided to facilitate Indigenous Nations and communities' participation in the hearing process, enabling them to make their concerns and views known to the Commission.

237. The Commission has heard from Indigenous Nations and communities about the need to commence the Indigenous Knowledge study and the noted assessments in order to gather the information needed for a more complete understanding of the potential and real impacts of the proposed DNNP on the Indigenous Nations and communities. The expectations of the Commission include ongoing communication, engagement and consultation between OPG, CNSC and the Indigenous Nations and communities regarding the proposed DNNP, and the production of engagement reports to be filed on record of the public hearing regarding the licence to construct application.

238. If OPG elects to proceed with the project, the Commission recognizes that there will be a continued obligation on the CNSC to hear and understand the perspectives and concerns of Indigenous Nations and communities, and the

[127] Transcript, January 23, 2024, page 32.

Commission expects ongoing engagement by OPG. With these considerations, the Commission expects OPG to fulfil its commitments with regard to studies and assessments and directs CNSC staff support those efforts.

239. Based on the presence of the consultation activities summarized above, the information presented on the record, having read and heard the submissions of all Indigenous Nations and communities and all other participants, and with consideration of the commitments of OPG and direction to CNSC staff[128] as set out at section 3.4.3.5 of this *Record of Decision*, the Commission is satisfied that consultation has been adequate to discharge the duty to consult in respect of its decision herein.

240. The Commission acknowledges that OPG's Darlington New Nuclear Project is expected to have many phases, beyond the current determinations directed by the Government of Canada's response to the JRP Recommendation #1. The Commission expects both CNSC staff and OPG to continue their respective consultation and engagement activities over the lifecycle of this Project and any subsequent applications to the Commission with all interested Indigenous Nations and communities and their representatives.

4.0 CONCLUSION

241. The Commission has considered the information and submissions of OPG, CNSC staff, and all participants, as set out in the material available for reference on the record, including all oral submissions made during the public hearing.

242. The Commission has considered whether the duty to consult has been triggered by the determinations before it in this matter, and whether that duty has been satisfied. As described in detail in this decision, the Commission is satisfied that the honour of the Crown has been upheld and that the legal obligation to consult and, where appropriate, accommodate Indigenous interests has been satisfied, relative to the Commission's considerations related to the applicability of the EA and plant parameter envelope to OPG's BWRX-300 chosen reactor technology.

243. The Commission acknowledges that if the DNNP is pursued, there will be future licensing decisions to which the duty to consult will also apply. The Commission expects CNSC staff and OPG to continue their respective consultation and engagement efforts over the lifecycle of the DNNP Project,

[128] The Supreme Court of Canada in *Chippewas* and *Clyde River* provide that some of the steps and elements provided for in this *Record of Decision* are some of the consultation activities that (if present) may indicate the sufficiency of a regulatory consultation process.

and any subsequent applications to the Commission, with Indigenous Nations and communities and their representatives, as well as with the public. In particular, the Commission expects OPG to fulfil its commitments with regards to the study and assessments that have been discussed in this *Record of Decision*.

244. Based in its consideration of the record before it, the Commission concludes the following:

- OPG adequately assessed the changes to baseline environmental conditions for environmental components assessed in the EA
- 60 of the 198 parameters from the PPE are no longer applicable to the BWRX-300 reactor technology
- 130 of the 198 parameters are bounded by the PPE values and the EA
- the 8 parameters outside of the bounding scenarios in the PPE were assessed and their effects are bounded by the EA
- the predicted environmental effects associated with the BWRX-300 reactor technology are bounded by the EA

245. The Commission therefore has determined that OPG's selected reactor technology, the General Electric Hitachi BWRX-300 reactor, is not fundamentally different from the reactor technologies assessed in the EA for the Darlington New Nuclear Project and determines that a new EA is not required.

246. The consideration of OPG's application for a licence to construct one reactor unit for its DNNP will be undertaken during a future public hearing of the Commission.

Timothy Berube
Acting President,
Canadian Nuclear Safety Commission

APPENDIX A – INTERVENORS

Intervenors – Oral Presentations	**Document Number**
Joint presentation by the Hiawatha First Nation (HFN), the Curve Lake First Nation (CLFN) and the Mississaugas of Scugog Island First Nation (MSIFN), represented by Chief K. Knott (CLFN), F. Chua (CLFN), Chief L. Carr (HFN), and Chief K. LaRocca (MSIFN)	CMD 24-H2.23 CMD 24-H2.23A CMD 24-H2.25 CMD 24-H2.25A CMD 24-H2.26 CMD 24-H2.26A
Organization of Canadian Nuclear Industries, represented by B. Fehrenbach	CMD 24-H2.13
Durham Nuclear Awareness, the Slovenian Home Association and the Canadian Environmental Law Association, represented by S. Libman and Dr. M. V. Ramana	CMD 24-H2.8 CMD 24-H2.8A
E. Gigantes	CMD 24-H2.36
Saugeen Ojibway Nation, represented by Chief C. Ritchie, J. Keeshig Martin and K. Tucker (Pape Salter Teillet, LLP)	CMD 24-H2.22
Darlington Nuclear Community Advisory Council, represented by D. Hardy, H. Reid, and R. Rock	CMD 24-H2.4
Society of United Professionals, represented by M. Johnston and Dr. K. Atkinson	CMD 24-H2.6
Bill Noll	CMD 24-H2.28 CMD 24-H2.28A
Dennis LeNeveu	CMD 24-H2.38
Regional Municipality of Durham, represented by E. C. Baxter-Trahair	CMD 24-H2.41 CMD 24-H2.41A
Sarah Gabrielle Baron	CMD 24-H2.10
Gordon Edwards	CMD 24-H2.33
Concerned Citizens of Renfrew County and Area, represented by O. Hendrickson	CMD 24-H2.30
Northwatch, represented by B. Lloyd	CMD 24-H2.32 CMD 24-H2.32A
North American Young Generation in Nuclear, Durham Chapter, represented by H. Luong	CMD 24-H2.14
North American Young Generation in Nuclear, represented by M. Mairinger	CMD 24-H2.15
Radiation Safety Institute of Canada, represented by Dr. C. Caldwell	CMD 24-H2.39 CMD 24-H2.39A
Intervenors – Written Submissions	**Document Number**
Waterfront Regeneration Trust	CMD 24-H2.2
E.S. Fox Limited	CMD 24-H2.3
AtkinsRéalis	CMD 24-H2.5
Durham College	CMD 24-H2.7
Susan O'Donnell	CMD 24-H2.9

Dale Dewar	CMD 24-H2.11
Municipality of Clarington	CMD 24-H2.12
Canadian Nuclear Workers' Council	CMD 24-H2.16
Kinectrics Inc.	CMD 24-H2.17
Bruce Power	CMD 24-H2.18
Ann McAllister	CMD 24-H2.19
John D. Jacobs	CMD 24-H2.20
GEH SMR Technologies Canada, Ltd. (GEH SMR Canada) and GE-Hitachi Nuclear Energy America, LLC (GEH-A)	CMD 24-H2.21
Canadian Nuclear Association	CMD 24-H2.24
Clarington Board of Trade	CMD 24-H2.27
Cathy Vakil	CMD 24-H2.29
Nuclear Waste Management Organization	CMD 24-H2.31
Métis Nation of Ontario	CMD 24-H2.34
Nuclear Transparency Project	CMD 24-H2.35
Simon J Daigle	CMD 24-H2.37
BWXT Canada Limited	CMD 24-H2.40