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Written submission from Northwatch

Exposé oral

Mémoire de Northwatch

In the Matter of the

À l'égard de

Darlington New Nuclear Project

Projet de nouvelle centrale nucléaire de Darlington

Application to renew the nuclear power reactor site preparation licence for the Darlington New Nuclear Project

Demande de renouvellement du permis de préparation de l'emplacement d'une centrale nucléaire pour le projet de nouvelle centrale nucléaire de Darlington

Commission Public Hearing

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Northwatch Comment on the Application by Ontario Power Generation for the Renewal of the Nuclear Power Reactor Site Preparation Licence for the Darlington New Nuclear Project

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Northwatch

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Image on cover page: Figure 2: Aerial View of DNGS from the West. DNNP Project Site is Immediately East of the Existing Station. Beyond OPG's Darlington Property Boundary is St. Marys Cement Plant (circa 2008). Source: Ontario Power Generation DNNP PRSL Renewal Application, page 18

1. Context

In October 2020 the Canadian Nuclear Safety Commission (CNSC) issued a notice that it would conduct a public hearing on an application received from Ontario Power Generation Inc. (OPG) seeking to renew the Nuclear Power Reactor Site Preparation Licence for the Darlington New Nuclear Project (DNNP).

The current licence was issued in August 2012[1] following a public hearing on the environmental assessment (EA) and license application, held over seventeen days in 2011. The current licence does not expire until August 2022.

As per their 2009 EA and 2006 license application, OPG is proposing to locate the DNNP on its Darlington Nuclear Generating Station site in the Municipality of Clarington, approximately 65 km east of Toronto ,Ontario.

According to the notice, the current licence authorizes OPG to prepare the Darlington Nuclear site for the potential future construction and operation of a new nuclear generating station. A separate application and licensing process, with public participation, will be necessary should OPG decide to go forward with the construction and operation of new nuclear reactors within the Darlington site.

The notice also states that OPG is currently managing the site, focusing on items such as the Bank Swallow Program, aquatic environment characterization and once-through condenser cooling. OPG is seeking a 10-year licence renewal and amendment of its licensing basis to include modern regulatory references as well as modern codes and standards.

As stated by OPG in their application, OPG has not initiated any licensed activities and has not selected a reactor technology for DNNP. [2] However, in a stakeholder session convened by OPG on March 22 2021, OPG confirmed that they would be selecting the reactor technology for recommendation to the OPG Board of Directors by November 2021.

[1] Record of Proceedings, Including Reasons for Decision, Application for the Issuance of a Licence to Prepare Site for a New Nuclear Power Plant at the Darlington Nuclear Site, issued to Ontario Power Generation on August 17 2012

[2] Ontario Power Generation DNNP PRSL Renewal Application, June 2020

2. Northwatch's Interest

Northwatch is a public interest organization concerned with environmental protection and social development in northeastern Ontario. Founded in 1988 to provide a representative regional voice in environmental decision-making and to address regional concerns with respect to energy, waste, mining and forestry related activities and initiatives, we have a long term and consistent interest in the nuclear chain, and its serial effects and potential effects with respect to northeastern Ontario, including issues related to uranium mining and refining, nuclear power generation, and various nuclear waste management initiatives and proposals as they may relate or have the potential to affect the lands, waters and/or people of northern Ontario.

Northwatch has a dual mandate that includes public interest research, education and advocacy to promote environmental awareness and protection of the environment, and support and promotion of public participation in environment-related decision-making.

Northwatch is interested in Ontario Power Generation's proposed approach to nuclear waste management and containment over various time frames. Northwatch's issues and concerns relate to the generation and management of the nuclear wastes that will result from Ontario Power Generation's operations. The wastes of concern include those wastes which will result from continued and future reactor operation, including and particularly – in this case – the novel wastes from the range of under-development reactors which Ontario Power Generation may select for siting at the Darlington Nuclear Generating Station.

Given Ontario Power Generation's established practice of transferring radioactive wastes from the Darlington NGS to the Western Waste Management Facility on the eastern shore of Lake Huron, and in light of OPG's failed proposal to bury radioactive wastes beside Lake Huron, and the given the OPG controlled Nuclear Waste Management Organization's current investigation of the Revell Lak area in northern Ontario as a potential burial location for high level nuclear (irradiated) fuel waste and potentially other radioactive wastes - including wastes generated through the construction, operation and decommissioning of so-called "small modular

reactors" – all licensing stages related to the development of new reactors at the DNN is of direct interest to Northwatch.

3. OPG's Application to Renew the DNN Site Preparation License

A public hearing, conducted by a Joint Review Panel (JRP) of the Canadian Environmental Assessment Agency and Canadian Nuclear Safety Commission, was held from March to April 2011 to consider the DNNP EIS and PRSL application.

The EIS, license application and hearing described and considered OPG's project at that time: to construct up to four new reactors of one or more of four designs put forward by OPG.

In May 2012, the Government of Canada accepted the JRP recommendations for the DNNP, which concluded that and the Site Preparation License was subsequently issued for a ten year period.[3]

As outlined in OPG's application and their written submission in support of that application, since 2012 OPG has been maintaining the Power Reactor Site Preparation Licence (PRSL) and – it would seem perhaps most importantly to OPG – they have been "monitoring the Ontarioelectricity market; and keeping abreast with emerging advanced nuclear power reactor technologies." [4]

Northwatch's review has found that the application and supporting documents ran short in terms of including directly relevant information in (particularly related to site layout and configuration, candidate reactor designs, and waste management) but ran long on promotional text and "nuclear visioning", much of which was erroneous and/or misleading. For example, Section 2.0 of the CMC, "OPG's New Nuclear Vision" includes old and tired attempts to promote nuclear power production at the expense of cheaper, safer, lower carbon and more available alteratives, namely renewable energy options. That OPG is still trying to convince anyone that renewable energy sources must be accompanied by nuclear supply because they renewable energy sources are "intermittent" is evidence that OPG's worldview and information sources are outdated.[5]

[3] CMD 21-H4.1, February 24, 2021, Pg 51

[4] OPG Written Submission In support of the renewal of Darlington New Nuclear Project's Power Reactor Site Preparation Licence, CMD 21-H4.1, February 24, 2021, Pg 7

[5] CMD 21-H4.1, February 24, 2021, Pg 9

In this section, OPG makes several pitches for nuclear power that hang off commitments to combating climate change, developing low-carbon energy mix or complementing renewable energy sources before getting to what we recognize as the heart of their vision: Support the future of the Canadian nuclear industry by providing continued opportunities for industry supply chain companies and promoting direct and indirect employment (in the nuclear industry).[6]

And as OPG clearly sets out: "A key step to realizing this vision is the successful renewal of the PRSL. [7]

For Commission members, a central question follows: is the purpose of the Commission to providing continuing opportunities the Canadian nuclear industry and nuclear industry supply chain companies? Is it the purpose of a licence renewal to provide continuing opportunities the Canadian nuclear industry and nuclear industry supply chain companies?

In their CMD, OPG goes on to describe "other important work to support the vision", including "ongoing work with three SMR technology development companies to consider potential options for future on-grid deployment" and to describe "signals" of support from federal and provincial governments for the "OPG's plans to advance new nuclear at Darlington."

OPG goes on at some length, describing the political positions that have been adopted by various players, before a brief summary of their planning intentions which are actually relevant to the license renewal application:

> OPG has not selected a technology developer partner, or reactor design, for DNNP at this time. OPG will ensure the selected reactor technology is within the bounds of the licensing basis for the DNNP PRSL, with detailed demonstration of this to be addressed during the subsequent licensing process for the Construction phase of DNNP.
>
> For planning purposes, OPG envisions the new nuclear facility at DNNP will be in operation by 2028, as described in the DNNP PRSL Renewal Plan [R-3]. An indicative schedule for DNNP, as illustrated in Figure 5, shows approximate timelines for licensed activities associated with this Application.
>
> The above timeline is subject to a decision by OPG and its shareholder, the Province of Ontario, to decide to progress to a formal Project to construct a new nuclear facility, as well as all necessary licensing and regulatory approvals.[8]

[6] CMD 21-H4.1, February 24, 2021, Pg 9-10
[7] CMD 21-H4.1, February 24, 2021, Pg 10

Despite the ample allocation of print space given to their "nuclear vision" and the acknowledgement that they are engaged with "three SMR technology development companies", at no point does OPG identify those three potential vendors (GE Hitachi, Terrestrial Energy and X-energy) or the three reactor designs under consideration (BWRX-300 small modular reactor,[9] Integral Molten Salt Reactor,[10] and Xe-100[11]).

In OPG's Application to Renew the DNN Site Preparation License, OPG describes the PRSL as "a significant asset for OPG and the Province of Ontario"[12], and argues that it should be renewed to "to allow for the project to advance in accordance with OPG's current business planning assumptions for new generation capacity". The application also reminds us that the "The PRSL allows OPG to conduct the site preparation activities for the future construction and operation of a new Nuclear Generating Station (NGS) with a maximum net electrical output of 4800 megawatt electric (MWe)."[13]

The dominant rhetoric around small modular reactors is that they are being developed for remote communities and mines and resource extraction projects off-gird, as an alternative to diesel. One of OPG's key buzz phrases around their SMR interests is "Innovating for tomorrow".[14] The output of the reactor designs OPG is considering range from 80 to 300 mw. While the purpose of the 2009 project as presented in the EIS was muddy at best, the purpose of this project is clearly different, as indicated by the 2009 project have an output between 4 and 15 times more greater than the 2021 version.

In their *Application to Renew the DNN Site Preparation License*, Ontario Power Generation OPG acknowledges that the basis for their existing licence includes the safety analysis that was performed during the last application period, and that detailed assessment reports (LBDs) in support of the original application were submitted to the CNSC.[15]

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[8] CMD 21-H4.1, February 24, 2021, Pg 10-11
[9] https://nuclear.gepower.com/build-a-plant/products/nuclear-power-plants-overview/bwrx-300
[10] https://www.terrestrialenergy.com/
[11] https://x-energy.com/reactors/xe-100
[12] Application to Renew the DNN Site Preparation License, pg 7
[13] Application to Renew the DNN Site Preparation License, pg 15
[14] https://www.opg.com/innovating-for-tomorrow/small-modular-nuclear-reactors/
[15] Application to Renew the DNN Site Preparation License. Pg 90

We note that these assessments were done when Ontario Power Generation was considering a completely different set of potential designs. At no point does the 2020 / 2021 documentation indicate that assessments have been undertaken with consideration of the three new under-development reactor designs.

According to OPG, their Commission Member Document (CMD) summarizes the evidence that demonstrates OPG meets all the legal requirements of the Nuclear Safety and Control Act and the associated Regulations, and that OPG continues to be qualified to carry on the licensed activities and makes adequate provisions to protect the health, safety and security of persons and the environment. OPG also maintains national security and measures required to implement international obligations, for the DNNP.[16]

Again we note that there is no indication that assessments have been undertaken with consideration of the three new under-development reactor designs.

Thirdly we agree with OPG that the "CMD contains a summary of the information documented in the Application" but do not agree that it contains "the information necessary for the Commission to make its decision associated with the licence renewal application".[17]

The information necessary for the Commission to make its decision for a licence to prepare a site for nuclear reactor operations would include descriptions of those reactors and their spatial requirements and factors which would affect the site configuration. Key site configuration factors include the spatial requirements of not only the reactors, but also of their associated infrastructure including heat transport systems, fuel handling and storage, and waste handling and storage.

Not only is that necessary information not included, but the CMD appears to include no additional information, despite it being produced close to a year after the application was produced.

[16] OPG Written Submission In support of the renewal of Darlington New Nuclear Project's Power Reactor Site Preparation Licence, CMD 21-H4.1, February 24, 2021
Pg 3
[17] CMD 21-H4.1, February 24, 2021 Pg 3

CNSC staff appear to have followed OPGs lead quite closely, ignoring the elephant in the room – three elephants, actually – citing the 2012 EA conclusions and previous licensing decision as if the project was unchanged. CNSC staff go as far as to stage that "in reviewing OPG's licence application, CNSC staff determined that the scope of the renewal application remains within the bounds of the previously approved environmental assessment."[18]

While it was – and remains – Northwatch's assessment that it was erroneous for the 2008 environmental assessment to be carried out without a reactor design having been selected and a detailed description made available (this absence in effect made the EA a project review without a project), this is even more the case in this application for license renewable because:

- OPG has not included even a general description of reactor design options under consideration
- While OPG included in their CMD (but not in their application) an indication that there are reactor designs under consideration, OPG does not identify them
- OPG publicly identified the reactor designs they are considering in a media event in November 2020 but does not include that publicly disclosed information in their application or CMD
- In November 2020 OPG identified the three technologies
- The three new technologies greatly diverge from the design concepts presented in the 2009 EA and considering during the 2011 EA hearing

We acknowledge CNSC's position that "when OPG submits documentation regarding technology selection CNSC staff will review and confirm whether OPG has clearly demonstrated that reactor technology selected remains within the bounds of the JRP EA report and complies with CNSC regulatory requirements outlined in REGDOC 1.1.1"[19] we are of the view that this assessment should be done at this stage, with OPG's application to renew the license to prepare the site, given the effect reactor selection could have on site configuration.

Further, the CNSC staff CMD states the following:

[18] CNSC Staff CMD: 21-H4, 8 March 2021, Pg 7
[19] CNSC Staff CMD: 21-H4, 8 March 2021, Pg 43

> If OPG submits an application for a licence to construct that includes any changes to the predicted environmental effects from any revised design and/or baseline information, CNSC staff will conduct an environmental review determination to assess whether the proposed project is outside the bounds of the scope, predictions and conclusions of the previous EA. If CNSC staff determine that, the proposed project is outside the bounds of the previous EA scope, predictions and conclusions a further review will be required. CNSC staff would then determine what type of environmental review would be required.

Northwatch contends that this decision should rest with the Commission rather than with staff, and that the decision should be made with public and Indigenous input, based on a full disclosure by OPG and the various vendors.

REQUEST: The Commission require OPG to provide a complete project description following selection of their preferred reactor design prior to re-filing their application to renew the site preparation licence, to provide the Commission with an information base to consider whether the previous EA was for the same project as which OPG is not proposing to undertake.

4.0 Lack of Information Regarding Site Layout

Northwatch has identified site layout as a key area of interest in this review.

Given the very limited information provided in OPG's licence renewal application[20], this section will look closer at the adequacy (or inadequacy) of the information provided in the application describing the site configuration and layout.

This review is being undertaken with consideration of the following three factors:

- On November 13 2020 Ontario Power Generation announced resumption of planning activities for future nuclear power generation at its Darlington site, to host a Small Modular Reactor (SMR)[21]
- OPG has announced that it is "advancing engineering and design work with three grid-scale SMR developers" and has identified GE Hitachi, Terrestrial Energy and X-energy as design options[22], all of which are novel designs, still under development and differ significantly from the group of reactors identified as options before and during the 2011 EA review and licensing
- And in light of OPG's stated intention to select one of three new reactor designs by November 2021[23], which are different than the four possible reactor designs that were presented in OPG's 2009 licence application[24] and the 2011 hearing

[20] Darlington New Nuclear Project Power Reactor Site Preparation Licence Renewal Application, June 2020, asfound at https://www.opg.com/document/dnn-application-for-renewal-of-site-preparation-licence/
[21] Media Release: OPG resumes planning activities for Darlington New Nuclear
Clarington site expected to be future home to a grid-size Small Modular Reactor, November 13, 2021, as found at https://www.opg.com/news-and-media/media_release/opg-resumes-planning-activities-for-darlington-new-nuclear/
[22] Media Release: OPG paving the way for Small Modular Reactor deployment
OCTOBER 6, 2020, as found at https://www.opg.com/innovating-for-tomorrow/small-modular-nuclear-reactors/
[23] Darlington New Nuclear Project Information Session – Site Preparation Licence Renewal Application, March 22 2021
[24] Application for a Licence to Prepare Site for the Future Construction of OPG New Nuclear at Darlington, September 30, 2009, as found at
https://archive.opg.com/pdf_archive/Nuclear%20Licencing%20Documents/Darlington%20New%20Nuclear/Licence_application_2009.pdf

This section of the Northwatch review will focus on the current regulatory requirements and outline why Northwatch is of the view that the rather limited information provided in the licence renewal application with regards to site layout fails to meet these regulatory requirements.

It should also be noted that, while Northwatch has focused on the lack of proper description of the site layout, many of the deficiencies discussed in this part of our submission are present throughout the licence renewal application. Indeed, lack of details is a problem that can be observed throughout the application, and Northwatch's comments are thus relevant to the application in its entirety.

4.1. Application should contain at least the same information as the 2009 application

According to subsections 5(a) and 5(b) of the *General Nuclear Safety and Control Regulations*[25], an application for renewal of a licence shall contain the following information:

a) The information required to be contained in an application for that licence by the applicable regulations made under the *Nuclear Safety and Control Act*[26] (emphasis added)
b) A statement identifying the changes in the information that was previously submitted

The information that must be contained in a renewal application is thus exactly the same information as the original application – supplemented by a statement that identifies any changes in the information that was submitted in the original application.

So, without commenting on sufficiency of information contained in the 2009 licence application, and while considering the clear requirements of section 5 of the *General Nuclear Safety and Control Regulations*, it seems reasonable to conclude that the licence renewal application must contain at least the same information as that which is provided in the 2009 licence application, rather than rely on references to the 2009 licence application. It is the position of Northwatch that the licence renewal application clearly fails to do.

Indeed, the numerous references to the 2009 licence application are required exactly because information provided in the 2009 application has not been included in the licence renewal

[25] General Nuclear Safety and Control Regulations SOR/2000-202
[26] Nuclear Safety and Control Act, S.C. 1997, c. 9

application. This alone makes it clear that the licence renewal application fails to live up to the requirements in section 5 of the *General Nuclear Safety and Control Regulations*.

Finally, relying on the 2009 licence application creates an unnecessary risk of discrepancies between older, outdated regulatory requirements and information, which form the basis of the 2009 licence application, and more current regulatory requirements and information. This risk can easily be eliminated by providing a more comprehensive licence renewal application that does not rely on references to information that can only be found in the 2009 licence application. For these reasons the Commission should refuse to consider the licence renewal application in its current form.

Furthermore, if the commission does accept this licence renewal application, they do so relying heavily on the 2009-application. It is thus not sufficient for the Commission to review the licence renewal application. To have a full understanding of what is applied for, the Commission would also have to go through the 2009 licence application and its supporting documents and determine if OPG has accounted for all possible discrepancies and outdated information. If the Commission accepts the renewal application without reviewing the 2009 licence application and its supporting documents, the current members of the Commission are essentially making a decision partially in the blind, i.e. without fully knowing what it is they are approving.

4.2. Information must be *'contained in'* the application and be made publicly available

It also flows from the requirement in section 5 of the *General Nuclear Safety and Control Regulations* that the information must be 'contained in' the application, that the information must be included in the licence application as submitted to the CNSC and made available to the public.

As such, Information cannot reasonably be said to be 'contained in' an application, if it is not part of the main application document itself or included in documents submitted along with the application, but is instead contained in separate documents that intervenors are not given access to, or which intervenors have to explicitly request to receive. The 'contained in' requirement must, at a minimum, be read as requiring the information to form an integral part of the licence

application and be made readily available to the public, unless a specific reason such as confidentiality allows for the information to not be made available.

Furthermore, according to subsection 40(5)(a) of the *Nuclear Safety and Control Act*, the Commission shall hold a public hearing when exercising its power under subsection 24(2) to renew a licence. And, according to subsections 24(2)(a) and 24(2)(b) the Commission may renew a licence only upon receipt of an application *"in the prescribed form and containing the prescribed information and undertakings and accompanied by the prescribed documents"* (emphasis added).

Read together with the above-mentioned requirement regarding what must be 'contained in' a licence application, Section 40 (5) (a) and Section 24 (2) make it clear that, before an application can be considered at a public hearing, it is a requirement that the prescribed information is 'contained in' this application. If an application, as submitted, does not contain the prescribed information, it must be rejected. As will be shown below, it is indeed Northwatch's conclusion that the licence renewal application, as submitted, fails to provide the required information.

4.3. Information regarding the site layout that must be 'contained in' the application

Northwatch has looked at the information regarding the site layout which must be contained in the application according to the above-mentioned regulations and REGDOC 1.1.1.[27]

Section 4 of the *Class I Nuclear Facilities Regulations,*[28] is of particular interest, as it sets out the extensive information that must be provided in an application for a site preparation licence for Class I nuclear facilities.[29] Of the numerous different types of information that must be contained in the application, Northwatch particularly notes that the following information relevant to site layout must be included in the licence application:

[27] Site Evaluation and Site Preparation for New Reactor Facilities, Regulatory document REGDOC-1.1.1, Canadian Nuclear Safety Commission (CNSC) 2018
[28] Class I Nuclear Facilities Regulations (SOR/2000-204)
[29] Section 4 of the *Class I Nuclear Facilities Regulations* refers to Section 3 of the same regulation. Section 3 in turn refers to Section 3 of the *General Nuclear Safety and Control Regulations*. In other words, the information listed in Sections 3 and 4 of the *Class I Nuclear Facilities Regulations* as well as the information listed in Section 3 of the *General Nuclear Safety and Control Regulations* must all be included in a site preparation licence.

- A description of the site of the activity to be licensed, including the location of any exclusion zone and any structures within that zone.[30]
- Plans showing the location, perimeter, areas, structures and systems of the nuclear facility. [31]

These requirements do not appear to be met in full. For example, figure 9[32] simply shows a rectangle labelled '*power block area*', but does not attempt to illustrate any of the actual structures within this power block area.

While OPG notes on several occasions in its licence renewal application that it is still considering what reactor technology to employ, this should not be used as an excuse to not provide any descriptions and illustrations showing the structures of the plant designs under consideration. Rather, the Commission should, at a minimum, require OPG to provide descriptions and accompanying illustrations for each of the plant designs under consideration. Without this information, it is next to impossible to truly judge whether the proposed site will be suitable for a nuclear plant of the size and design that OPG has in mind. Thus, if OPG is unable to provide such descriptions and illustrations, its renewal application should be considered premature, and rejected as such.

4.3.1. Site layout requirements in REGDOC 1.1.1

REGDOC 1.1.1, section 4.6.3, further elaborates on the requirements outlined in the *Nuclear Safety and Control Act* and its regulations. As such, the following is said about the information to be provided by an applicant with regards to the Physical Design SCA:

> The applicant shall present the proposed layout of structures in the final layout state (to the extent practicable).
>
> For each proposed plant design and proposed layout(s) of areas, structures and systems of the nuclear facility (or facilities), the applicant shall provide:

[30] Section 3 (a) of the *Class I Nuclear Facilities Regulations*
[31] Section 3 (b) of the *Class I Nuclear Facilities Regulations*
[32] Licence renewal application, figure 9, page 37

- satellite or aerial photographs of the site and surrounding region, with a resolution scale of 1:1,440 or better, including the proposed exclusion zone and site boundary
- topographical map(s) for each site layout in 1:50,000 to no smaller than 1:250,000 scale for all structures and associated infrastructure (all drawings are to scale and include a legend)
- proposed layouts of labelled structures, including:
    - reactor building
    - turbine-generator block
    - auxiliary power buildings (for example, diesel generators) and related fuel storage
    - switchyard
    - cooling tower structures, water intakes and outlets
    - large structures (for example, machine shops or storage buildings for parts inventory) in the immediate vicinity to the proposed nuclear facility
- proposed conventional and radiological waste transfer and storage areas
- layouts of all site roads and proposed transmission corridors
- locations of transportation corridors in the vicinity of the site (for example, rail lines,
  shipping lanes, roads, proximity to airports)[33]

Additionally, in the Application Guide included in REGDOC 1.1.1, the following is said regarding the individual SCA's, including the Physical Design SCA:

> For each SCA, the applicant shall address the information described in section 4, to the level of detail and the specific considerations relative to the design of the proposed reactor facility. The applicant should also address the associated guidance, relative to the design of the proposed reactor facility.[34]

It is thus clear that all of the types of information described in REGDOC 1.1.1, section 4.6.3, shall be addressed to some reasonable degree in OPG's site preparation licence application. Looking at the contents of section 5.5 of the licence renewal application, it is clear that some these points have not been addressed at all, while others are insufficiently addressed.

Northwatch therefore recommends that the Commission require OPG to submit an updated renewal application document that contains a reasonably detailed level of information addressing the information listed in REGDOC 1.1.1, section 4.6.3.

[33] REGDOC 1.1.1, section 4.6.3 Layout of areas, structures and systems
[34] REGDOC 1.1.1, Section A.6, page 57

4.4. Specific comments regarding site layout

As part of Northwatch's review of the licence renewal application document, we have noted the following specific comments and questions regarding site layout, which should be addressed before the Commission proceeds with its consideration of the application.

4.4.1. Section 2.0 – General Description of the Project[35]

This section contains very generic info that could be used to describe any number of building projects. In its current form it is thus of little value in terms of actually describing what this licence application seeks to accomplish. Northwatch recommends that this section be expanded with sufficiently project-specific information.

4.4.2. Section 2.1 – Excavation and Grading[36]

Regarding contaminated soil, we note that it appears as though OPG has not yet taken steps to determine if (some of) the soil is contaminated. This is also suggested by OPG's comments in section 4.4.7.[37]

From the descriptions in section 2.1 and 4.4.7 of the licence renewal application, one gets the clear impression that excavation may be initiated without first drilling/sampling the soil or otherwise testing for contamination, and if contamination is discovered during the excavation process, then it will be "managed if encountered".

Northwatch finds this approach somewhat backwards. Indeed, any issues related to contaminated soil should, to the extent possible, be identified before submitting an application, to ensure proper steps are taken to deal with any contamination, including whether or not this may influence the site layout and/or site preparation. Further, we note that OPG has had more than a decade to complete this evaluation.

[35] Licence renewal application, page 24
[36] Licence renewal application, page 25
[37] Licence renewal application, page 57

4.4.3. Section 2.1 – Flood Control and Shoreline Protection[38]

In this section, OPG notes that *"To accommodate the site layout and provide for shoreline protection, some amount of lake infilling likely will be required in the area directly south of the proposed project area along the Lake Ontario shoreline."*[39]

The possible need to fill in part of lake Ontario is arguably a significant and fundamental part of the site layout and preparation, and yet OPG appears to have not yet fully concluded if this will be necessary or not. Northwatch finds this unacceptable, and also for this reason recommends that OPG be required provide more detailed descriptions of the site layout. This requirement would likely help make it clear if infilling of the lake is necessary and to what extent it would be required. Alternatively, a better description of the possible site layouts would also help make it clear why OPG has not yet been able to determine with certainty if infilling will be required.

Northwatch notes that Figure 9[40] actually shows an area of lake infill as well as the NND power block area extending beyond the current shoreline by means this infilled area, suggesting that infill will be required.

In the end, what is noted above suggests that OPG has not considered the project in sufficient detail or lacks sufficient information about their own project to apply for a site preparation licence, or that OPG has not narrowed down its site layout options sufficiently to provide a detailed description of the layout, including any need to expand the shoreline outwards. Regardless of the reason, OPG should be required to provide a detailed description of any plans to fill in the lake, including possibly outlining different scenarios where varying degrees of infill would be required.

4.4.4. Section 3.1 – Location and Site Layout[41]

In this section, Northwatch has identified issues with several of the provided maps.

[38] Licence renewal application, page 27
[39] Ibid.
[40] Licence renewal application, page 37, Figure 9: OPG Darlington New Nuclear Project (DNNP) Proposed Site Layout
[41] Licence renewal application, page 30

Figure 5[42] is provided at a low resolution, and essentially so pixelated that most text on the survey is rendered illegible. Similarly, Figure 7[43] is also low resolution and some text is illegible. Northwatch requests that these maps be provided as either higher resolution and/or as vector based graphics to make it possible to zoom in and read the text and see the finer details of the maps.

Figure 8[44] is also too pixelated, making it difficult/impossible to make out the direction and degree of grading across the site. Northwatch is of the view that this figure should include a contour drawing of the proposed site that is sufficiently legible and shows not only the proposed site contours after completion of the proposed site preparations but also the unaffected contours in the surrounding area.

4.4.5. Section 4.1 – Site Evaluation[45]

In section 4.1, we see that the site evaluation studies considered *"hazards related to site characteristics and their influence on potential dispersion of radioactive materials"* (emphasis added).[46] The findings of these studies should be included in this section in sufficient detail, or a reference should be made to a different section containing these findings. It should also be mentioned what influence, if any, these findings have had on site layout considerations.

It is furthermore noted that *"For each of the hazard areas evaluated, the risk was determined to be negligible or could be reduced to an acceptable level through design mitigation."*[47] A brief description of the types of design mitigations considered should be mentioned here. This could be done by providing key examples from the report *Site Evaluation for OPG New Nuclear at Darlington – Nuclear Safety Considerations*.[48]

[42] Licence renewal application, page 33, Figure 5: OPG Darlington New Nuclear Project (DNNP) Survey Drawing
[43] Licence renewal application, page 35, Figure 7: DN Site Existing Contour Drawing
[44] Licence renewal application, page 35, Figure 8 DN Site Proposed Contour Drawing
[45] Licence renewal application, page 39
[46] Ibid.
[47] Licence renewal application, page 40
[48] Site Evaluation for OPG New Nuclear at Darlington – Nuclear Safety Considerations, September 2009, NK054-REP-01210-00008 R001

4.4.6. Section 4.3 – Plant Parameter Envelope[49]

OPG notes that *"The design of the facility of the selected nuclear reactor technology must fit within the PPE values."*[50] These PPE values should be included or summarized to some reasonable extent in the licence application.

OPG furthermore states that *"The PPE also takes insights from the site characteristics and may be impacted based on changes to the site characteristics since the original application [R-5]. As per the new environmental data collected, and conclusions provided in the Environmental LRAR [R-15], the site characteristics have not shown any impact to change the PPE."*[51] A summary of these changes, or at least the most significant changes, should be provided in the licence application. This would allow members of the public to assess these changes themselves, without first having to request access to supporting documents.

OPG also notes as follows:

> With respect to the PPE, the original evaluations for site suitability were completed in accordance with RD-346, RD-337, Design of New Nuclear Power Plants and NSR-3 Rev. 0, Site Evaluation for Nuclear Installations, which have since been superseded by REGDOC-1.1.1, REGDOC-2.5.2, Design of Reactor Facilities: Nuclear Power Plants, and NS-R-3 Rev 1, respectively. There were no significant findings as a result of the updated evaluations and any new requirements were either already satisfied as documented in the existing LBDs or they will be addressed at a later stage upon the selection of a reactor technology. These findings were reviewed in detail in the relevant appendices of the Nuclear Safety LRAR [R-11].[52]

The application should address all new requirements in the mentioned REGDOC's. Alternatively, OPG should be asked to state in its application which requirements remain to be addressed to allow the public and the Commission to determine if any significant requirements remain unaddressed.

[49] Licence renewal application, page 42
[50] Ibid.
[51] Ibid.
[52] Licence renewal application, pages 42-43

4.4.7. Section 4.7.1 – Evaluation against the CNSC Safety Goals[53]

Readers can surmise from this section that a number of reactor designs have been considered. The licence renewal application should describe these different reactor designs to provide relevant context, as OPG is essentially applying for a licence to commence site preparation for one of these reactor designs. At minimum, the application should summarize the spatial requirements of each different design that was or is under consideration, along with the spatial requirements of associated infrastructure.

4.4.8. Section 5.5.3 – Layout of Areas, Structures, and Systems[54]

Overall, Northwatch finds that this section contains insufficient information about the actual layout of the site. As such, section 5.5.3 needs to be significantly expanded in both scope and level of detail.

To give an example, OPG makes the following statement: *"The original application [R-5] presented the proposed layout of areas, structures, and systems of the nuclear facility to the extent practicable. A high level summary is presented in Section 3.1 of this application."*[55]

As noted above, Northwatch finds this approach of referring back to the 2009 licence application to be an unacceptable approach, and one which does not meet regulatory requirements. The layout of the nuclear facility is at the core of this licence renewal application, and is entirely integral to any meaningful reading of this application. As such, all information found in the 2009 licence application should be included in the licence renewal application to provide much needed context for the information provided in the various sections of the application.

OPG also notes that *"there have been no licensed site preparation activities undertaken for DNNP over the previous licensing period"* and that *"the existing licensing basis and DNNP commitments, with respect to the physical design of the nuclear facility, remain appropriate for the project scope […]".*[56]

[53] Licence renewal application, page 71
[54] Licence renewal application, page 94
[55] Ibid.
[56] Licence renewal application, page 95

This statement suggests that descriptions of the proposed layout could potentially be carried over from the original application into the current application, accompanied by any updates that OPG deems necessary or which are required by changes in the regulatory requirements – or indeed to simply provide an updated version of the original application. No rationale has been provided for why this approach was not taken.

REQUEST: The Commission direct OPG to address all of the above noted shortcoming in its re-filed Application for a License to Prepare the Site

5. Site Configuration for the Safe Storage of Radioactive Wastes

The Joint Panel Review report including a number of waste-related recommendations, including the following:[57]

#	JRP Recommendation	Government Response
52	The Panel recommends that prior to construction, the CNSC require OPG to make provisions for on-site storage of all used fuel for the duration of the Project, in the event that a suitable off-site solution for the long-term management for used fuel waste is not found.	The GOC accepts the intent of this recommendation to the extent that it is the responsibility of waste owners for managing and funding the safe and secure operation of their own wastes. Canada's 1996 Radioactive Waste Policy Framework states that the owners of radioactive waste are responsible for developing and implementing solutions, including all costs associated with safely and securely managing their wastes.
53	The Panel recommends that prior to construction, the CNSC require OPG to make provisions for on-site storage of all of low and intermediate-level radioactive waste for the duration of the Project, in the event that a suitable off-site solution for the long-term management for this waste is not approved.	The GOC accepts the intent of this recommendation to the extent that it is the responsibility of waste owners for managing and funding the safe and secure operation of their own wastes, in accordance with CNSC's regulatory requirements. Canada's 1996 Radioactive Waste Policy Framework states that the owners of radioactive waste are responsible for developing and implementing solutions, including all costs associated with safely and securely managing their wastes.

The Government Response was sufficiently ambiguous as to allow some interpretation that Recommendations 52 and 53 were not accepted, but other general statements indicate that the Government did in fact accept the Panel's recommendations. That aside, however, no disagreement would be expected with a conclusion that the Government Response certainly does not preclude the Commission from carrying out the JRP's recommendations.

While one section of OPGs CMD seeks to persuade that the Site Preparation license application need to not address radioactive waste management because site preparation activities "do not involve the handling of radioactive materials and will not generate any radioactive wastes[58] an earlier section clearly states that the initial application included the "proposed layout of areas, structures, and systems of the nuclear facility to the extent practicable".

[57] CMD: 21-H4, Appendix E, E.2 Status of JRP Recommendations, beginning at page 72
[58] OPG Written Submission In support of the renewal of Darlington New Nuclear Project's Power Reactor Site Preparation Licence, CMD 21-H4.1, February 24, 2021, pg 45

Clearly, the radioactive waste management structures and facilities are part of the structures, and systems of the nuclear facility.

However, the several diagrams included in the OPG application fail to depict the radioactive waste management structures and facilities associated with this project:

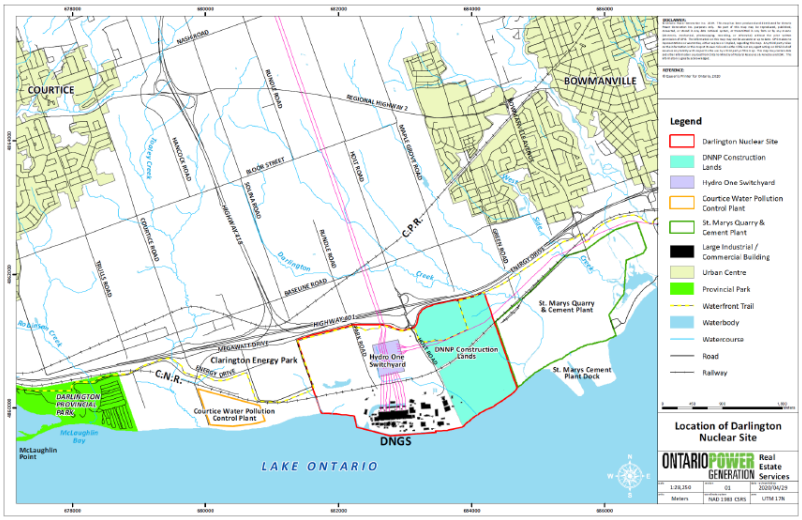

Figure 4: Location of Darlington Nuclear Site

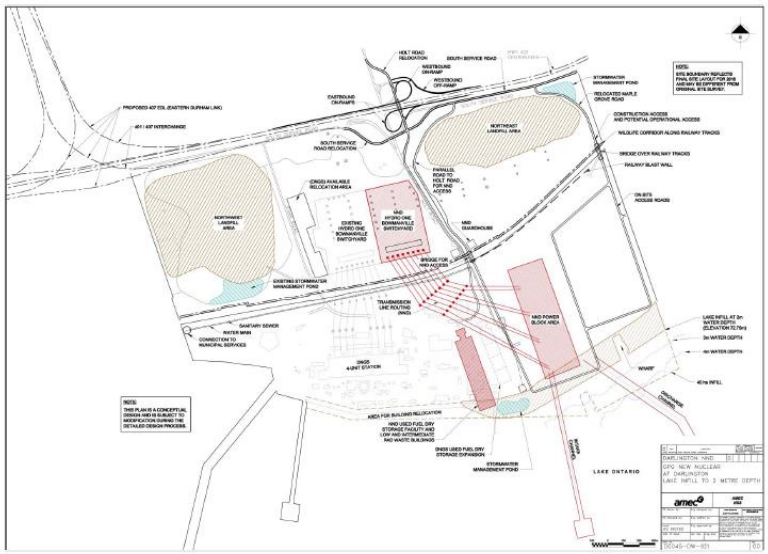

Figure 9: OPG Darlington New Nuclear Project (DNNP) Proposed Site Layout

REQUEST: the Commission direct OPG that, should they decide to return in 2022 they do so only with a complete application, that application should include details on site configuration that accommodates waste storage and reflects reactor selection

6. Licence Period

By November 2021 Ontario Power Generation Nuclear Division expect to have selected their preferred reactor design for recommendation to the OPG Board of Directors. The current PRSL does not expire until August 2022.[59]

As stated by OPG, the driver behind the early application for renewal is a business interest, rather than a safety interest:

> OPG is applying for a 10-year licence renewal with a licence term starting from August 2021. This renewal would allow for the project to advance in accordance with OPG's current business planning assumptions for new generation capacity. This approach will mitigate the risk of the PRSL expiring and preserve, for both OPG and our shareholder, the Province of Ontario, maximum flexibility for future nuclear generation at Darlington. The PRSL continues to be a significant asset for OPG and the Province of Ontario, as it enables the option for future additional nuclear generation capacity in Ontario, which would maintain a reliable source of baseload nuclear power within Ontario's energy supply mix.

Also as stated by OPG, to date, OPG has not initiated any licensed activities and has not selected a reactor technology for future generation and no Engineering, Procurement and Construction company has been contracted.

There are two reasonable alternatives: a) CNSC directs OPG to re-make their application after they have selected their preferred technology and are in a position to provide an adequate project description, or b) CNSC grants OPG a one year extension, directs OPG to re-make their application after they have selected their preferred technology and are in a position to provide an adequate project description.

REQUEST: The Commission directs OPG to re-make their application after they have selected their preferred technology and are in a position to provide an adequate project description

[59] OPG's Application to Renew the DNN Site Preparation License, pg 15

7. Qualified Operator

Before issuing a licence, the CNCS must conclude that, further to paragraphs 24(2), (4)(*a*) and (*b*) of the NSCA, the licensee is qualified to carry on the activity authorized by the licence.

In the case of the site preparation license, it will not be OPG but a contracted third party that will be carrying out these activities:

> The original application outlines OPG's expected role as an owner in an EPC contract. This contracting strategy remains applicable to DNNP site preparation licensed activities. Therefore, it is OPG's responsibility to ensure ongoing and intrusive oversight through its management system, and the EPC Company has its own defined and implemented management system compliant with applicable current standards in accordance with Commitment D-P-4 in the DNNP Commitments Report [R-19]. OPG will ensure that the required quality, the health, safety and security of the public and workers, and protection of the environment are achieved. [60]

As of the time of the application, OPG had not yet initiated any licensed activities, had not selected a reactor technology for future generation and no Engineering, Procurement and Construction (EPC) Company had been contracted][61]

OPG sets out in their application how the specific organizational structure for DNNP has evolved since the original application, indicating that an organizational structure where OPG provides an oversight role to an EPC Company, remains applicable to the site preparation license, but that "OPG is planning to have a project oversight organization, thus ensuring the licences and approvals are achieved and the overall contract completed once the EPC Company is established. The organizational structure will continue to evolve as project activities increase and the EPC Company for the project is established.[62]

As a general comment, these sections of the Application suggest a fluctuating management system, which raises questions about who is actually going to "carry on the activity authorized by the licence".

[60] OPG's Application to Renew the DNN Site Preparation License, pg 86
[61] OPG's Application to Renew the DNN Site Preparation License, pg 16
[62] OPG's Application to Renew the DNN Site Preparation License, pg 84

This is an important question for site preparation but becomes increasingly more important should the project move forward to construction and operation.

OPG provides no information about even the designs that are under consideration, let alone about what the owner/operator arrangements might be more might become between OPG and the vendors and potentially other parties.

REQUEST: CNSC direct OPG to include in their initial Project Description a clear and detailed explanation of any arrangements between OPG and any other parties, including the vendor, that might include contracting out operation of any eventual reactor(s) or any other deviations from an owner/operator status for OPG with respect to new reactors at the Darlington site.

REQUEST: that the Commission ensure than any future determinations of whether the licensee is qualified to carry on the activity authorized by the licence be done with a detailed description by any future licensee of any owner / operator / contractor arrangements that might be in place.

8. Conclusions

In conclusion, Northwatch draws three main findings from our review:

1. The application is premature,
2. The information provided is inadequate
3. The Commission must make a determination as to whether the Project of 2022 is the same Project as the one that was the subject of an EA and licencing decision in 2012

Further to those findings, we make the following requests of the Commission:

REQUEST: The Commission require OPG to provide a complete project description following selection of their preferred reactor design prior to re-filing their application to renew the site preparation licence, to provide the Commission with an information base to consider whether the previous EA was for the same project as which OPG is not proposing to undertake.

REQUEST: The Commission direct OPG to address all of the above noted shortcoming in its re-filed Application for a License to Prepare the Site

REQUEST: The Commission direct OPG that, should they decide to return in 2022 they do so only with a complete application, that application should include details on site configuration that accommodates waste storage and reflects reactor selection.

REQUEST: The Commission directs OPG to re-make their application after they have selected their preferred technology and are in a position to provide an adequate project description

REQUEST: CNSC direct OPG to include in their initial Project Description a clear and detailed explanation of any arrangements between OPG and any other parties, including the vendor, that might include contracting out operation of any eventual reactor(s) or any other deviations from an owner/operator status for OPG with respect to new reactors at the Darlington site.

REQUEST: that the Commission ensure than any future determinations of whether the licensee is qualified to carry on the activity authorized by the licence be done with a detailed description by any future licensee of any owner / operator / contractor arrangements that might be in place

All of which is respectfully submitted on behalf of Northwatch on May 3, 2021.