



BRUCE C NUCLEAR PROJECT

IAA Reference # 88771

Comments by Northwatch on
Bruce Power's Initial Project Description

October 28, 2024



Introduction

On August 12, 2024 the Impact Assessment Agency (the Agency) posted the first notice on the project registry for the Bruce C Nuclear Project, announcing that Bruce Power is proposing to construct a new nuclear generating station at the existing Bruce Power nuclear power site near Kincardine, Ontario, and that a comment period was opening on an Initial Project Description. Comments were initially required by September 12th, but the deadline was later extended until October 28th, following Bruce Power requesting a suspension of time.¹

According to notices posted by the IAA, the Bruce C Nuclear Project (the Project) is subject to an integrated assessment to meet the requirements of both the Impact Assessment Act and the Nuclear Safety and Control Act. The Impact Assessment Agency of Canada (IAAC) and the Canadian Nuclear Safety Commission (the CNSC) are described by the Agency to be “working together on the integrated assessment to achieve the goal of “one project, one assessment.”

The notice indicated that Indigenous Peoples and the public were being “invite” to review the summary of the Initial Project Description and provide comments on the proposed project, directing that “comments should be based on local, regional, or Indigenous Knowledge of the site or surrounding environment, or provide any other relevant information that may support the conduct of the assessment” and that “this feedback will help IAAC and the CNSC prepare a summary of issues for the proponent.”

At the same time, the Agency created a project homepage (reference number 88771) for communicates related to the Project and its review.

According to the IAA project home page, Bruce Power is proposing the site preparation, construction, operation and decommissioning of a new nuclear generating station within its existing Bruce Power nuclear power site, located in the Municipality of Kincardine, Ontario. As proposed, the Bruce C Nuclear Project would provide up to 4,800 megawatt-electric of new nuclear generating capacity in Ontario and operate for 60 to 100 years. Several nuclear reactor technologies will be considered for the project.

Northwatch’s Interests

Northwatch’s interest in the project is two-fold: 1) Northwatch is a regional coalition in northeastern Ontario, with membership that resides in the six federal districts, including Manitoulin and Algoma, which in turn include the island and mainland of the north shore and North Channel of Lake Huron and so are potentially affected by nuclear operations on the east

¹ Reference Document #1, as posted at <https://iaac-aeic.gc.ca/050/evaluations/document/158989>

coast of Lake Huron (i.e. at Bruce Nuclear Generating station, and 2) at present northern Ontario is one of two areas under investigation as a potential location for the processing, burial and abandonment of all of Canada's high level nuclear waste in a single location and the addition of four large reactors at Bruce NGS would expand the inventory and extend operations significantly, thus increasing the risk to northeastern Ontario as a result of transportation and the burden on northern Ontario from the deposition of the increased inventory of irradiated fuel waste.

Northwatch brings decades of experience and expertise related to high-level nuclear waste and its management (on site and proposed off-site) and transportation risks. Northwatch was a major intervenor in the previously proposed deep geological repository for low and intermediate level radioactive wastes at the same location has the Bruce C project (the Bruce Nuclear Waste Generation Station) and has intervened on nuclear waste matters during licencing reviews for the Bruce Nuclear Generating station.

Summary Comments

We understand the current comment period to be for the purpose of responding to the Initial Project Description and providing comments on the proposed project for the purpose of contributing to the IAAC's preparation of a summary of issues, and that the development of the terms of reference and impact statement guidelines will be drafted in consideration of the identified issues and other relevant matters. However, we note that many of the comments already submitted – including by several nuclear companies and industry organizations - took the opportunity to express their views on the project in terms of support or opposition. Accordingly, we will also take the opportunity to summarize our position with respect to the project.

Northwatch is opposed to further expansion of nuclear projects at the Bruce Nuclear Generating Station, including the current "Bruce C" proposal to develop up to 4,800 megawatt-electric of new nuclear generating capacity. We are opposed to this project on the basis of nuclear power production being a high-cost and high-risk option for the generation of electricity and which produces a range of radioactive wastes, some of which must be contained and kept separate from the environment into perpetuity. The technology produces adverse effects along the nuclear fuel chain – uranium mining, milling, refining, conversion and fuel production – while consuming large amounts of energy and generating greenhouse gasses at each step. All these impacts are prior to operation of the reactors; during operation, nuclear reactors release radioactive and other emissions, carry risks of high-consequence accidents and malfunctions, and create a lasting legacy of radioactive wastes. The electricity needs of the Province of Ontario could be met with lower risk and more cost-effective options which would have a shorter timeline from proposal to actual operation.

We have reviewed the Initial Project Description² and found that it failed to provide adequate information necessary to the impact assessment process, even taking into account that it is an initial project description and therefore a summary document. In summary, we found the document to be lacking the following area:

- Discussion of the need or purpose of the project was substituted with unconvincing statements referencing recent provincial announcements
- alternatives to the project were similarly not presented
- the selected technology (reactor type) was presented as a listing with graphics, with no actual description of the technology or any related safety analysis
- there were only very summary references to the various project stages (site preparation, construction, operation, decommissioning and abandonment)
- we found no descriptions accident scenarios, including worst case scenarios, or of malfunctions or malevolent acts
- there were either inadequate or no descriptions of health, environmental and social impacts and potential impacts for each project stage
- there were minimal references and no substantive descriptions or discussion of the radioactive wastes that will be generated (low, intermediate, high) and how they will be managed in the short, medium, and long-term, with the exception of a questionable statement about a proposed management option for high-level radioactive waste which will be discussed in more detail in later sections of this submission
- there is no discussion of the fuel type, source, and risk factors for the technologies under consideration
- there is inadequate discussion of ownership and accountability for Bruce-owned reactors proposed for operation on an OPG-owned site, and no discussion of the assignment of liabilities and cost exposure
- the potential and responses to accidents, malfunctions and malevolent acts (e.g. terrorist attacks) is wholly absent
- proliferation and security risks related to fuel sourcing and production, operations, and waste generation and management are absent
- the costs and financing for each operating stage, including decommissioning and long-term waste management are absent

While the above summary points are a comment on the initial project description and our observations of what necessary information was excluded or absent from the description, we would further comment that the issues list produced by the Agency as a result of this comment period should include but not be limited to each of the topics identified above, and the subsequent Detailed Project Description to be produced by the proponent should address these

² Bruce C Project Initial Project Description, August 2024, as posted at <https://iaac-aeic.gc.ca/050/documents/p88771/158463E.pdf>

areas, and that the eventual draft Tailored Impact Statement Guidelines – should the proponent persist with the project – should also require detailed address of these areas, as well as others identified by Indigenous and other public participants in this review process.

Comments on the Initial Project Description

The following comments are with respect to the Initial Project Description; note that the page numbers are in reference to where the item was found in the Initial Project Description, rather than of the summary.

Page	Text or topic in the Initial Project Description	Northwatch Comment
10	Bruce Power is the operator of the largest electric generating facility in Canada, providing clean, reliable nuclear power to Ontario, and cancer-fighting medical isotopes across the globe. Zero-emissions nuclear power is the backbone of Ontario's clean electricity system and is a crucial part of Ontario's clean energy future.	The Detailed Project Description must be fact and evidence based, rather than promotional. Nuclear power is not “zero-emission” and while nuclear power may be the preferred option of the proponent and maybe event – at the present time – of the provincial government, it is not a “crucial part” of Ontario's energy future. Ontario's ratepayers and the environment and population of Ontario would be better served by a mix of renewable energy, storage and conservation which could be brought online at lower cost, with less environmental impact, and in much shorter timeline so that it might actual help meet the critical timeline for reducing Ontario's carbon footprint.
10	Forecasts from the Independent Electricity System Operator (IESO) show that electricity demand in Ontario could more than double by 2050, due to electrification and economic growth in the province. The IESO Pathways to Decarbonization study [R-4] highlights the need for maximum planning flexibility to meet forecasted demand if Ontario is to pursue a low-carbon electricity future and meet net zero goals.	These projects are reminiscent of those in Ontario Hydro's 25 Year Demand Supply Plan. That plan was subject to an environmental assessment process and following scrutiny before a public tribunal was withdrawn by Ontario Hydro. Ontario no longer has an electricity planning process that includes public involvement of independent public or technical scrutiny. Accordingly, these projects are untested and unreliable, and do not provide an evidentiary basis for federal review processes.

11	As proposed, the Project considers several reactor technologies. Bruce Power plans to use the federally integrated IA process to assess the impact that new nuclear would have on the environment, Indigenous Nations and Communities, and local municipalities.	Northwatch supports proponents using a public process to do early planning for potential projects. However, with the strict timelines for the current form of federal impact assessment, this early planning must occur prior to the proponent entering the IAA process, rather than through the IAA process. For the purpose of the federal impact assessment process, the proponent must be prepared to present their selected technology in detail. Alternative reactor technologies may be presented as alternative means of carrying out the project, but there must be a selected technology for which a detailed and information base review can be undertaken.
11	Environmental monitoring (measurement, sampling, and analysis) ensures that the health of the environment and people are protected and verifies that emissions and effluents from operations result in negligible environmental risks [R-7].	It's important that the review process be fact-based and that the proponent be directed to avoid wordsmithing for the purpose of obscuring potential areas of concern. Environmental monitoring should – if done appropriately carried out – provide information that verifies what is being released and in what volume; this does not “ensure” health, or “negligible environment risk”, but may provide information about levels of release which will then inform an assessment of the level of risk or impairment of human health of the environment.
11-12	The Project will be sited within the existing fenced and secured 932-hectare Bruce Power site, along with new intake and discharge structures in Lake Huron. During the Pre-Planning Phase of the Project, Bruce Power commenced a siting process to support a thorough understanding of potential constraints and opportunities at the Bruce Power site.	The IPD references a “pro-planning process” but provides no description of this; an impression may be created by this section that there was Indigenous engagement, but there is no substantive description provided to support such an impression; the Detailed Project Description must provide substantive information in support of claims or generalized statements. The text describes a siting process having already taken place, but only as “relating to land footprint suitability”
12	The process included reviewing opportunities, constraints and exclusion areas present at the Bruce Power site. The siting process allowed for an objective,	

	transparent and rigorous understanding of the Bruce Power site relating to land footprint suitability and will provide foundational information that will assist with future engagement with Indigenous Nations and Communities and local communities regarding siting.	and provides no definition of “land footprint” and makes no reference to ecological or Indigenous cultural values and land uses.
18-19	<p>3.2 Summary of Key Interests and Issues Raised</p> <p>Table 1 provides a summary of key interests and issues raised through engagement during the Pre-Planning Phase of the Project. Information on how Bruce Power currently plans to address the interests and issues is also provided. The information has been organized by the following general themes:</p> <ul style="list-style-type: none"> • Project details: includes purpose and need, technology, waste considerations and timeline; • Potential cumulative effects: considers the effect of the Project and activities combined with the effect of other past, current or reasonably foreseeable projects and activities; • Local municipal government and public engagement: considers the way groups wish to participate in the IA process; • Environment: includes climate change, and natural heritage; • Human health and community wellbeing: includes quality of life, recreation, safety, security and emergency management, and traffic; and • Socio-economic conditions: includes local labour force, income, employment, education and childcare, health care, housing, population growth and development, training and business opportunities 	<p>The “Summary of Key Interests and Issues Raised” during Bruce’s pre-planning engagement exercise provides a useful identification of key issues and concerns, all of which should be addressed in detail in the Detailed Project Description and in more detail in the eventual Impact Statement and supporting technical documents.</p> <p>We note that while Bruce Power was able to identify these as key interests and issues, these issues were not addressed or were inadequately addressed in the Initial Project Description. This is a curious misstep, and the Agency must be clear and direct in its direction to the proponent as it provides direction through the Issues List, the Tailored Impact Statement Guidelines (TISG) and other communications that these issues must be addressed in detail and in a fact and evidence based manner, with sufficient supporting information and referenced materials to allow a thorough understanding and examination by both the public and Indigenous participants and the regulatory decision-makers.</p>
20	<p>Table 1: Summary of Public Key Interests and Issues Raised in Pre-Planning Phase Waste</p> <ul style="list-style-type: none"> • Questions around the interim management of radioactive waste for the proposed Project; where it will be stored and how. 	<p>Again, we note that while Bruce Power was able to identify these as key interests and issues, these issues were not addressed or were inadequately addressed in the Initial Project Description.</p>

	<ul style="list-style-type: none"> • Questions about how the Project will deal with the long-term disposal of nuclear waste. • Questions about the type of fuel waste that will be created, the difference between Small Modular Reactor (SMR) and large reactor waste, and whether the Project's fuel waste will meet criteria for the Nuclear Waste Management Organization's (NWMO) proposed Deep Geological Repository for high level radioactive waste. 	<p>In Table 1, the only response on the waste issues was a statement that "Information on waste alternative means has been included in Section 12.0" which is titled "A List of Potential Alternative Means and Potential Alternatives to the Project". This section does NOT include information on waste management; instead, it sidesteps the discussion with a statement that "Radioactive waste management strategies at licenced facilities identified to be feasible will be carried through the IA". Further, this section states that "the NWMO is implementing Canada's plan for the safe, long-term management of used nuclear fuel", while omitting that the NWMO project is still at a conceptual stage, is decades from implementation even if the NWMO does manage to bring the project forward, and will address only nuclear fuel waste. This is a key issue for the Issues list and TISG.</p>
20	<p>Potential Cumulative Effects</p> <ul style="list-style-type: none"> • Comments that the region is in the midst of the country's third largest infrastructure project (Bruce Power's Major Component Replacement) which is already putting pressure on infrastructure, services and resources. • Questions about how the proposed project will relate to NWMO's proposed Deep Geological Repository in South Bruce. • Need information about workforce of proposed project including potential overlap with Major Component Replacement activities and the proposed NWMO Deep Geological Repository in South Bruce. • Suggest that the socio-economic impacts of the Bruce C Project need to be assessed with consideration of timing of NWMO's proposed Deep Geological Repository from 	<p>Bruce Power's response in the IPD to the recognized issue of cumulative effects is to simply say "As part of the IA, Bruce Power will be completing a Cumulative Effects Assessment" and that there will be chapter on it in the Impact Statement. This is a key issue for the Issues list and TISG.</p> <p>Issues and concerns about the potential establishment of a deep geological repository for high-level radioactive waste (as per the NWMO's conceptual "Adaptive Phased Management Plan" (APM) are raised and documented in the context of both radioactive waste management and cumulative effects.</p>

	<p>a workforce, housing and infrastructure perspective in order to understand the regional impacts of both projects.</p> <ul style="list-style-type: none"> • Comments that the potential expansion of nuclear generation capacity at the Bruce Power site, and movement of used fuel/high level waste from the OPG Western Waste storage site to the NWMO Deep Geological Repository host community (Ignace or South Bruce) will impact how the County, and member municipalities, plan for and prepare for an emergency, and will generate a significant amount of work for Emergency Management programs in the area. • Suggest that if South Bruce does not become the host of the Deep Geological Repository, there will still be infrastructure and emergency management impacts to County service delivery with nuclear waste being transported in and out of the OPG Western Response in next column: As part of the IA, Bruce Power will be completing a Cumulative Effects Assessment. More information on the Cumulative Effects Assessment is provided in Section 14.22. 	<p>Radioactive waste is a key issue for the Issues list and the TISG. Bruce Power must be directed to address these issues in detail and in a fact-based manner in both the Detailed Project Statement and any eventual Impact Statement.</p> <p>With respect to the management of low and intermediate level radioactive wastes, Bruce Power must be required to present a detailed and fact-based plan. Clear direction should be provided in advance that a general reference or reliance on the “Integrated Radioactive Waste Strategy” will not suffice, and that as per both Canada’s radioactive waste policy and the nuclear industry’s Integrated Strategy it is the waste owner that is responsible for the waste, and Bruce Power must detail how they will carry out those responsibilities.</p> <p>In the case of high-level waste, a detailed methodology must be described including short-term, medium term, and long-term. In addition to any reference to presumed reliance on the NWMO’s conceptual APM, the description must include on-site components of that plan, including all waste transfers, and an on-site contingency plan.</p>
27	<p>The following section provides a summary of early engagement with Indigenous Nations and Communities, including a summary of key issues raised. A description of planned future engagement is also summarized below. At the request of MNO, details of engagement related to the Project with the MNO are not included in this IPD. Bruce Power has and will continue to engage with MNO about the Project on a regular basis.</p>	<p>No explanation is provided as to why details of engagement with the MNO are excluded. Without a description of the activities – or at least an explanation as to why a description is omitted - Bruce Power’s statements about past and future engagement lacks credibility. In our own region issues are being raised by First Nations about the role of MNO in project consultations; this project review would benefit from clear explanations as to the purpose and engagement with MNO by Bruce Power.</p>

29	<p>Through our engagement, we understand that key areas of interest and concern include, environmental impact and cumulative effects, impacts to rights, nuclear waste, economic participation, training, employment and business opportunities.</p> <p>SON has also expressed challenges they are facing related to capacity resources and competing engagement on the high volume of development in SON Territory, including other large nuclear and energy projects such as the NWMO's Deep Geologic Repository and TC Energy's proposed pumped storage project. SON had expressed that it is a challenge to assess the potential for new nuclear development given the lack of resolution of legacy issues related to long-term nuclear operations and waste storage in SON Territory.</p>	<p>Issues and concerns about the potential establishment of a deep geological repository for high-level radioactive waste (as per the NWMO's conceptual "Adaptive Phased Management Plan" (APM) are raised and documented in the context of radioactive waste management, cumulative effects and Indigenous engagement.</p>
36	<p>6.0 STRATEGIC ASSESSMENTS RELEVANT TO THE PROJECT</p> <p>One of the factors to be considered in the IA process of a designated project is the extent to which the effects of the designated project hinder or contribute to the Government of Canada's ability to meet its commitments in respect of climate change such as the Paris Agreement, Canada's 2030 target and the goal of Canada achieving net-zero emissions by 2050.</p>	<p>Any consideration of the extent to which the effects of the Bruce C project could hinder or contribute to the Government of Canada's ability to meet its commitments in respect of climate change such as the Paris Agreement, Canada's 2030 target and the goal of Canada achieving net-zero emissions must be fact and evidence based. This is a key issue for the Issues list and the TISG as well as for any eventual Impact Statement to be prepared by Bruce Power.</p>
43	<p>The final choice of technology will be made at a future point in time, but the baseline conditions and Project components should not substantially change from what will be included in the Impact Statement. In developing the PPE for the Project, Bruce Power adopted the approach used in the 2008 Darlington New Nuclear Project (DNNP) Plant Parameter Envelope, the 2008 Bruce Power New Nuclear Plant Parameter Envelope [R-</p>	<p>The selected technology must be described in the Detailed Project Description. The proponent must be required by the TISG to present their selected technology in detail in the Impact Statement and supporting documents.</p> <p>Bruce Power references DNNP as an example of the use of the PPE. In the case of the DNNP, the Government</p>

	<p>49], and DNNP’s 2023 updated version of its Plant Parameter Envelope [R-50]. Further, if the technology ultimately selected falls outside of those identified in the PPE, Bruce Power will demonstrate that such technology will be bounded by the PPE. Currently, a technology “evaluation process” in collaboration with reactor technology providers is ongoing to further validate the list of reactor designs. Bruce Power also plans to use the information collected in the technology evaluation process to inform the PPE. Bruce Power anticipates that the technology selection process will be completed prior to the Licence to Construct application being submitted to the CNSC. In 2024, OPG, Bruce Power, and IESO will complete a feasibility study, which will assess the timing of additional new build in the province. This information will be used to further inform the timeline for technology selection.</p>	<p>decision was that if the selected technology was fundamentally different a new assessment would be required. However, despite the BWRX-300 technology being fundamentally different than those included in the 2008 PPE, no new assessment was required. For the Agency, the lesson learned must be that the project review MUST include the project, i.e. the selected reactor technology.</p> <p>Alternative reactor technologies may be presented as alternative means of carrying out the project, but there must be a selected technology for which a detailed and information base review can be undertaken. This is a key issue for the Issues list and the TISG as well as for any eventual Impact Statement to be prepared by Bruce Power.</p>
45-46	<p>The bounding envelope currently includes the available information for the following reactor designs. Schematics of the reactor designs are shown in Figure 9 for illustrative purposes only.</p> <ul style="list-style-type: none"> • Atkins Réalis – MONARK; • Électricité de France – European Pressurized Water Reactor (EPR); • Hitachi-GE Nuclear Energy – Advanced Boiling Water Reactor (ABWR); • GE Hitachi Nuclear Energy – BWRX-300; and • Westinghouse – AP1000 Pressurized Water Reactor <p>The above list of technologies currently considered in the PPE are non-exhaustive and subject to change based on the ongoing technology evaluation process, continued internal development and engagement with Indigenous Nations and Communities. Bruce Power will provide a revision to the</p>	<p>The presence of the BWRX 300 in this short-list of potential reactors exemplifies why Bruce Power must be required to select the reactor technology prior to the impact assessment being undertaken. The inclusion of a 300 mw reactor in a project to produce 4,800 mw of power lacks all credibility. Is Bruce Power genuinely considering building 16 BWRX-300 reactors on the Bruce site? If so, their Figures 10-12 / Scenarios 1-3 are not applicable, and serve only to illustrate the inappropriateness of proceeding with a project review without an identified project, i.e. a reactor review without a reactor.</p> <p>Selection, identification and detailed description of the selected reactor technology is a key issue for the Issues list and the TISG as well as for any</p>

	project description as part of the Impact Statement and PPE, should the current PPE require an update based on the outcome of the technology evaluation for the next stages of Project development.	eventual Impact Statement to be prepared by Bruce Power
50	<p>12.0, 12.1 A LIST OF POTENTIAL ALTERNATIVE MEANS AND POTENTIAL ALTERNATIVES TO THE PROJECT</p> <p>Alternative Means</p> <ul style="list-style-type: none"> • Radioactive waste management strategies at licenced facilities identified to be feasible will be carried through the IA. Alternative means in the Impact Statement will include information on interim dry storage facility and low and intermediate-level waste facility. o The NWMO is implementing Canada's plan for the safe, long-term management of used nuclear fuel [R-52]. The transportation of used nuclear fuel in Canada is jointly regulated by the CNSC and Transport Canada. Transportation of nuclear waste is considered outside of the Project scope. 	<p>This section does NOT include information on waste management; instead, it sidesteps the discussion with a statement that "Radioactive waste management strategies at licenced facilities identified to be feasible will be carried through the IA".</p> <p>Further, this section states that "the NWMO is implementing Canada's plan for the safe, long-term management of used nuclear fuel", while omitting that the NWMO project is still at a conceptual stage, is decades from implementation even if the NWMO does manage to bring the project forward, and will address only nuclear fuel waste.</p> <p>Notably, Bruce Power is putting forward an argument that "Transportation of nuclear waste is considered outside of the Project scope". This would only be the case if Bruce Power's plan is for extended on-site storage, i.e. for no off-site transfer of the wastes.</p>
51	<p>12.2 Alternatives To The Project</p> <p>Bruce Power is a private nuclear power operator and is proposing the Project in response to Ontario's electricity needs and as a contribution to provincial and federal climate change objectives by providing clean, reliable, and affordable power. Exploring new nuclear generation at the Bruce Power site is a key element in the provincial government's Powering Ontario's Growth plan [R-42]. Bruce Power's focus is on nuclear power generation. This Project would represent a partial implementation of the Province of Ontario's energy plan which is also considering many</p>	<p>Section 22 (1) (d) of the Impact Assessment Act sets out that the impact assessment of designated projects must take into account the "the purpose of and need for the designated project". It does not set out that a provincial announcement or untested or unverified energy plan can be used as a substitution for clearly describing the purpose of and need for the project.</p> <p>Again, this description in future documents produced by Bruce Power must be factual and evidence based. It must not be substituted with</p>

	<p>other clean energy developments. Therefore, this Project is not an alternative to other clean energy projects but would be implemented together with other clean energy projects by other proponents on behalf of the Province of Ontario.</p>	<p>promotional pieces or statements of policy aspirations.</p> <p>Presentation of the need for the project and examination of alternative ways to meeting that need (i.e. not simply alternative means of carrying out the project) is a key issue for the Issues list and the TISG and an important part of the content that must be included in any eventual Impact Statement to be prepared by Bruce Power.</p>
53	<p>Section 13 (c) requirement: The legal description of land to be used for the project, including, if the land has already been acquired, the title, deed or document and any authorization relating to a water lot. IPD:</p> <p>As part of its planning process over the next few years, Bruce Power will pursue the opportunity for continuing the lease and operating the new nuclear power station for the lifetime of the reactors. Bruce Power will also demonstrate that it has authority to carry out future licensing activities related to the Project.</p>	<p>It is important that Bruce Power clearly set out the the details of ownership and responsibility sharing between Ontario Power Generation and Bruce Power, including for waste management and ownership, and the ownership, operation and assignment of liabilities related to waste and waste management. The description should explain clearly how the arrangement will be similar or different to the current leasing arrangement between Bruce Power and OPG through which OPG is assigned ownership and responsibility of the radioactive wastes generated by Bruce Power.</p>
56-58	<p>Figures10- 12: Proposed Site Layout Scenario1, 2 and 3</p>	<p>Future documentation should include a detailed description of how the three alternative sites were considered, advantages and disadvantages of each, including from a waste management perspective; the description must include identification of waste management facility locations, means of transport from point of generation to management location for each waste type, and calculations of worker exposures and public exposures and how they might vary based on location.</p>
59	<p>Due to shoreline erosion, bedrock outcrops exist along the Lake Huron shoreline between Inverhuron Bay and Baie du Doré. Inland,</p>	<p>Future documentation must explain shore line erosion in more detail, including rates, time frame, forecast, and consequence for operation, decommissioning and abandonment stages of the project on reactor</p>

		buildings and ancillary facilities, including and particularly waste management facilities
59	Wind data for the Bruce Power site are obtained from two meteorological towers (50 m on-site tower and 10 m off-site tower on Part Lot 1, Concession 5, Bruce Township) installed in 1990. The towers have been situated to ensure that meteorological measurements are representative of atmospheric conditions relevant to emissions conveyed inland.	Future documentation must expand on wind data, including wind patterns relative to distribution of radionuclides, radioactive gases, etc. In particular, there should be details included on potential impacts for Manitoulin Island, the North Channel and the North Shore of Lake Huron, as well as other areas in the Lake Huron watershed.
60	Data from 2014 and 2017 to 2019 were not used due to technical issues related to equipment deficiencies and/or retrieving and storing data. The 2011-2016 meteorological data was processed, and the corresponding wind rose at 10m height is shown in Figure 13. Air temperature data is collected from the on-site meteorological tower at the 10 m elevation. The hourly average monthly temperatures, including maximum and minimum values averaged over the ten -year period between 2007 and 2016, are shown in Table 5 of the 2022 ERA [R-7].	Future documentation must detail equipment failures, who was responsible, cause of failures, remedies, quality assurance / quality control measures that have been put in place, and future operations and expectations of reliability.
64	14.6 Hydrology and Water Quality The nearshore currents are predominantly bi-directional and parallel to shore. Alongshore currents can produce the effects of upwelling or downwelling when an established thermocline is present in Lake Huron.	Future documentation must discuss hydrology in a much broader context, including included on potential impacts for Manitoulin Island, the North Channel and the North Shore of Lake Huron, as well as other areas in the Lake Huron watershed and the transport of radionuclides.
75	14.17 Radiological Environment The radiological environmental monitoring (REM) program establishes a database of radiological activity measured in the environment near the Bruce Power site and determines the contribution of overall radiation dose to members of the public as a consequence of	Future documentation must discuss radiological release and potential effects in a much broader context, including included on potential impacts for Manitoulin Island, the North Channel and the North Shore of Lake Huron, as well as other areas in the Lake Huron watershed. the transport of radionuclides must be

	the radiological releases from normal operations on the Bruce Power site.	described in detail, for both local distribution and lake-wide distribution.
76	<ul style="list-style-type: none"> The ERA demonstrates that the operation of the Bruce Nuclear Facility has not resulted in adverse effects on human health of nearby residents or visitors due to exposure to radiological substances. For nonhuman biota exposure to radiological substances also resulted in no adverse effects [R-7]. 	Future documentation must include evidence-based information and analysis, including and particular with respect to radiological effects.
78	<p>14.22 Cumulative Effects</p> <p>Cumulative effects will be a chapter of the Impact Statement and also be inherently embedded within each section where possible. The approach for assessing potential cumulative effects will be defined in accordance with the Policy Framework for Assessing Cumulative Effects under the IAA [R-82]. This includes considering any cumulative effects that are likely to result from the Project and activities in combination with other physical activities that have been or will be carried out (also sometime referred to as past, present or reasonably foreseeable projects).</p>	Future documentation must include a thorough discussion of cumulative effects, including past, present and future, and including impacts of power generation, waste management, electricity transmission and all associated infrastructure from site preparation to decommissioning and abandonment; the presentation of cumulative effects must include all stages and all related activities, and at various spatial scales, i.e. site level, regional, SON territory, Lake Huron, and the Great Lakes watershed.
78	15.0 HEALTH, SOCIAL AND ECONOMIC CONTEXT	Socio-economic must include the same temporal and spatial scales as for cumulative effects study, as per above.
79	<p>The utilities industry employs the largest amount of Bruce County's workforce, followed by retail trade industry, and the health care and social assistance industry [R-86]. Today, Bruce Power is by far the largest employer in the county, employing more than 4,000 people. Ontario's Long-Term Energy Plan is counting on Bruce Power to provide a reliable and carbon-free source of affordable energy through 2064. Bruce Power is currently carrying out its Major Component Replacement Project.</p>	<p>Section 22 (1) (d) of the Impact Assessment Act sets out that the impact assessment of designated projects must take into account the "the purpose of and need for the designated project". It does not set out that a provincial announcement or untested or unverified energy plan can be used as a substitution for clearly describing the purpose of and need for the project.</p> <p>The description of need must be factual and evidence based. It must not be substituted with promotional pieces or statements of policy aspirations.</p>

81	<p>16.0 FINANCIAL SUPPORT THAT FEDERAL AUTHORITIES ARE, OR MAY BE, PROVIDING TO THE PROJECT</p> <p>In February 2024, the Government of Canada (Natural Resources Canada) announced up to \$50 million of support to Bruce Power through its Electricity Predevelopment Program. The funding is in support of Ontario's plan to maintain a clean energy grid while continuing to drive economic development and support Indigenous and community consultation. The funding, announced at the 2024 Canadian Nuclear Association annual conference, will support Bruce Power's pre-development work to study the feasibility of the option for a new nuclear build on the Bruce Power site. This aligns with the federal government's Powering Canada Forward plan [R-88] to build a net-zero economy, as well as the province's Powering Ontario's Growth plan [R-42], which lays out investment options to electrify the economy and meet growing clean energy demand.</p>	<p>The Government of Canada (Natural Resources Canada) having provide up to \$50 million of support to Bruce Power raises concern about the effect of this early and significant and very political support for the project on the independence of the impact assessment process and regulatory and government decision-making in general.</p> <p>In future documentation Bruce Power should clearly set out the details and the deliverable related to this funding, and the organizational position of the funding source relative to the project decision-makers in government and government agencies.</p>
83	Table 6: Changes to the Environment under Federal Legislation – Potential Effects	Waste facilities and waste management is excluded from changes and effects for various operations identified in table 6. In future documentation Bruce Power should clearly set out potential effects related to waste and waste management.
85	Bruce Power recognizes the value and importance of its interactions with Lake Huron. We greatly value this resource and return more than 99.9 per cent of the water used for once through cooling for current operations.	This section excludes discussion of radionuclide release in normal and accident conditions, thermal effects, and potential effects on Lake Huron. Bruce Power should clearly set out potential effects related to waste and waste management.
87	Based on review of Bruce Power's past and current engagement discussions, as well as any input on the IPD, the potential impacts of the Project to Indigenous Peoples (excluding social, economic and health conditions) are:	Impacts related to the production, treatment, and storage of nuclear Waste (all levels) and radiological dose to public and general radiological safety are acknowledged in the discussion of potential impacts on Indigenous

	<ul style="list-style-type: none"> • Impacts to fish and fish habitat from thermal impacts of cooling water or industrial water effluents; • Impacts to fish from impingement & entrainment in water intakes and structures; • Impacts to aquatic invertebrate, plant and nearshore wetland health related to thermal impacts from cooling water or industrial water effluents; • Impacts to terrestrial environments, species and habitat connectivity; • Impacts related to accidental spills released to the terrestrial and aquatic environments; • Impacts to ability of SON Members to access the SON Spirit Site / Burial Ground – Chiibegmegoong; • Impacts related to the production, treatment, and storage of nuclear Waste (all levels); • Cumulative impacts related to the combined past, present and future impacts of Bruce Power’s operations and the operations of the Project (other operations at the Bruce Power site - OPG, CNL and Hydro One), climate change, and other local and regional environmental stressors; • Radiological dose to public and general radiological safety; and • Impacts of changing climate to environmental regulatory approvals and limits. 	<p>Peoples, but not in other sections of the IPD.</p> <p>In future documentation Bruce Power should clearly set put the potential for impacts related to the production, treatment, and storage of nuclear Waste (all levels) and for radiological dose to public and general radiological safety; this should not be presented solely in the context of potential impacts on Indigenous people.</p>
90	<p>Active and Safe Storage Operations & Maintenance</p> <p>Active operations and maintenance activities may include:</p> <ul style="list-style-type: none"> • Operations and maintenance activities during commissioning may include: • Structure, System and Components (SSC) construction completion activities; • SSC turnover activities; • Commissioning- SSC testing and qualification activities; • Fuel loading; • Stormwater management; 	<p>Potential impacts related to Radioactive Waste Management Systems, Potential direct and indirect impacts related to accidental spills released to the terrestrial and aquatic environments, Potential direct and indirect impacts related to the production, treatment, and storage of nuclear waste (all levels), and potential direct and indirect impacts related to radiological releases to the environment are acknowledged in the discussion of potential impacts on</p>

<ul style="list-style-type: none"> • Final commissioning activities; and • Training of commissioning and operations staff. • Operations and maintenance activities during power operations and outages may include: <ul style="list-style-type: none"> • Nuclear Steam Supply System; • Nuclear Safety Systems; • Turbine Generator and Feedwater System; • Electrical Power Systems; • Service Water and Cooling Water Systems; • Material Handling Systems; • Radioactive Waste Management Systems; • Non-Radioactive Waste Management Systems; • Operational and Maintenance Programs; • Refurbishment and Major Maintenance; <p>Potential direct and indirect impacts to fish and fish habitat from thermal effluent from cooling water or industrial water effluents. Potential direct and indirect impacts to fish from impingement & entrainment in water intakes and structures.</p> <p>Potential direct and indirect impacts to aquatic invertebrate, plant and nearshore wetland health related to thermal effluent from cooling water or industrial water effluents.</p> <p>Potential direct and indirect impacts to terrestrial environments, species and habitat connectivity related to new infrastructure and increased human presence and vehicular traffic both on and off the Bruce Power site. Potential direct and indirect impacts related to accidental spills released to the terrestrial and aquatic environments.</p> <p>Potential direct and indirect impacts related to the production, treatment, and storage of nuclear waste (all levels).</p> <p>Cumulative environmental impacts related to the combined past, present and future impacts of Bruce Power's operations, the operations of the Project, other operations at the Bruce Power site (OPG, CNL and Hydro One), other local and regional projects and</p>	<p>Indigenous Peoples, but not in other sections of the IPD.</p> <p>In future documentation Bruce Power should clearly set put the potential for these impacts; this should not be presented solely in the context of potential impacts on Indigenous people.</p>
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	<p>environmental stressors, and climate change.</p> <p>Potential direct and indirect impacts related to radiological releases to the environment.</p>	
91	<p>Decommissioning Decommissioning activities may include:</p> <ul style="list-style-type: none"> • Support system shutdown; • Stormwater management; • Safe storage of radioactive waste, including used fuel; • Final disposal of used fuel.; and • Dismantlement and removal of reactors, and support infrastructure/systems. <p>Potential direct and indirect impacts to fish and fish habitat, aquatic invertebrate, plant and nearshore wetland health related to decommissioning activities; potential for positive impact related to restoration activities and cessation of impingement, entrainment and release of thermal effluent.</p> <p>Potential direct and indirect impacts to terrestrial habitats and species related to decommissioning activities; potential for positive impact related to restoration activities and cessation of high intensity of human activity on site. Potential direct and indirect impacts related to the treatment, and storage of nuclear waste (all levels).</p> <p>Cumulative environmental impacts</p>	<p>Potential impacts related to decommissioning including storage of radioactive waste, including used fuel, final disposal of used fuel, potential direct and indirect impacts related to the treatment, and storage of nuclear waste (all levels) are acknowledged in the discussion of potential impacts on Indigenous Peoples, but not in other sections of the IPD. In future documentation Bruce Power should clearly set put the potential for these impacts; this should not be presented solely in the context of potential impacts on Indigenous people.</p>
93	<p>23.0 AN ESTIMATE OF ANY GREENHOUSE GAS EMISSIONS ASSOCIATED WITH THE PROJECT</p> <p>Nuclear power emits just a few grams of carbon dioxide (CO₂) equivalent per kilowatt hour (kWh) of electricity produced. Based on the United Nations (UN) Intergovernmental Panel on Climate Change (IPCC) study, this equates to 12g CO₂ equivalent/kWh for nuclear [R-95], as shown below in Figure 15.</p>	<p>Future document requires a thorough and evidence based description of ghg emissions related to the operation and decommissioning of the reactor units, including during fuel production (from uranium mining, refining, conversion, fuel production, transportation, fuel bundle fabrication) and construction, operation, energy source including emergency energy sources and ghg output of testing backup power, and ghg impacts for all stages of waste management and infrastructure, including construction of waste management facilities, their operation,</p>

		transportation of wastes and decommissioning. Promotional claims that “Nuclear power emits just a few grams of carbon dioxide (CO2) equivalent per kilowatt hour (kWh) of electricity produced” are insufficient, lack credibility, and by extension will rob the process of credibility.
95	No emissions have been estimated for the decommissioning or safe storage phases since emissions could not be estimated with the information available at this time. Emissions from these phases are expected to be minimal but will be considered later when the necessary information is available.	Estimates of emissions, including ghg emissions, from the decommissioning and safe storage sessions must be included in future documentation. Promotional statements that they are “expected to be minimal” are insufficient. The discussion must be evidence based.
97	24.0 TYPES OF WASTE AND EMISSIONS GENERATED BY THE PROJECT The following section outlines potential waste and emissions that may occur as a result of the Project to the air, in or on water and in or on land, during any phase of the Project. Emissions and waste management options including handling, disposal and storage will be further assessed and evaluated in the IA.	Future documentation must include evidence-based information and analysis, including and particular with respect to emissions and waste management options including handling, disposal and storage. There must be a general description included in the Detailed Project Description and a thorough analysis included in the Impact Assessment.

Conclusions

The purposes of this Impact Assessment Act include fostering sustainability, projecting the environment, having fair and predictable impact assessment processes, insuring assessments take all effects into account, ensuring meaningful participation opportunities, relying on scientific information, and the assessment of cumulative effects.

In the instance of the assessment of the Bruce C Nuclear Project, these purposes can only be achieved if as starting steps the issues list includes those issues raised in this and other submissions as well as those identified in the IPD by Bruce Power, and by establishing that the assessment will be based on comprehensive and factual information about the Project and its potential effects.

We request that the Agency provide a detailed dispositioning of Northwatch’s and other comments as part of carrying out an assessment process that is transparent and one in which decisions are traceable and accountable.