The title "Bruce C Project" is displayed in a large, bold, dark blue sans-serif font, centered on the right side of the page. The background behind the text is a light blue gradient with a subtle grid of small white plus signs.

Bruce C Project

INITIAL PROJECT
DESCRIPTION

August 2024

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

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ABBREVIATIONS

Abbreviation	Definition
ABWR	Advanced Boiling Water Reactor
AP1000	Advanced Passive - 1000
APO	Annual Planning Outlook
BATEA	Best Available Technologies Economically Achievable
BHWP	Bruce Heavy Water Plant
BWRX	Boiling Water Reactor -10 th generation
CANDU	Canada Deuterium Uranium
CEAA	Canadian Environmental Assessment Agency
CGLR	Council of the Great Lakes Region
CH ₄	Methane
CMF	Central Maintenance Facility
CNL	Canadian Nuclear Laboratories
CNSC	Canadian Nuclear Safety Commission
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
COPC	Contaminants of Potential Concern
CRI	Climate Risk Institute
CSA	Canadian Standards Association
CSF	Central Storage Facility
CWMP	Coastal Waters Monitoring Program
dB	Decibel

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Abbreviation	Definition
DFO	Fisheries and Oceans Canada
DNNP	Darlington New Nuclear Project
EA	Environmental Assessment
ECA	Environmental Compliance Approvals
ECCC	Environment and Climate Change Canada
ECE	Early Childhood Education
EIS	Environmental Impact Statement
ELC	Ecological Land Classification
EMS	Emergency Medical Services
EO	Environment Office
EPR	European Pressurized Water Reactor
EPRI	Electric Power Research Institute
EPWR	European Pressurized Water Reactor
ERA	Environmental Risk Assessment
GBA+	Gender-Based Analysis Plus
GHG	Greenhouse Gas
GLC	Great Lakes Commission
GLFC	Great Lakes Fisheries Commission
HSM	Historic Saugeen Métis
I&E	Impingement and Entrainment
IA	Impact Assessment
IAA	Impact Assessment Act

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Abbreviation	Definition
IAAC	Impact Assessment Agency of Canada
IESO	Independent Electricity System Operator
IJC	International Joint Commission
IMPACT	Integrated Model for the Probabilistic Assessment of Contamination Transport
IPCC	Invasive Phragmites Control Centre
IPCC	Intergovernmental Panel on Climate Change
IPD	Initial Project Description
kWh	Kilowatt Hour
MECP	Ministry of the Environment, Conservation and Parks
MNRF	Ministry of Natural Resources and Forestry
MOE	Ministry of the Environment
MOU	Memorandum of Understanding
MW	Megawatt
MWe	Megawatts Electric
MWth	Megawatts Thermal
NII	Nuclear Innovation Institute
NO _x	Oxides of Nitrogen
NWMO	Nuclear Waste Management Organization
OPG	Ontario Power Generation
PAHs	Polycyclic Aromatic Hydrocarbons
PM	Particulate Matter
PPE	Plant Parameter Envelope

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Abbreviation	Definition
PQRA	Preliminary Quantitative Risk Assessment
PROL	Power Reactor Operating License
PSW	Provincially Significant Wetland
REM	Radiological Environmental Monitoring
SACC	Strategic Assessment of Climate Change
SAR	Species at Risk
SMR	Small Modular Reactor
SO ₂	Sulphur Dioxide
SON	Saugeen Ojibway Nation
SSC	Structure, System and Components
SW	Surface Water
TSS	Total Suspended Solids
UN	United Nations
UNSCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation
VC	Valued Component
VOCs	Volatile Organic Compounds
WWMF	Western Waste Management Facility

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

INTRODUCTION

This Initial Project Description (IPD) has been prepared in accordance with the *Impact Assessment Act*, (SC 2019, c 28, s 1 (IAA), [R-1]) and the *Information and Management of Time Limits Regulations* (SOR/2019-283, [R-2]). The organization of this IPD aligns with the information required pursuant to Section 3 and Schedule 1 of the *Information and Management of Time Limits Regulations* [R-2]. The IAAC’s “Guide to Preparing an Initial Project Description” was also used to prepare this IPD [R-3].

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.

Bruce Power currently produces 30 per cent of Ontario’s electricity on a site that has been safely generating nuclear power for over 50 years. The history of the Bruce Power site began with Canada’s first commercial nuclear reactor at Douglas Point that operated between 1967 and 1984. The Bruce Power site was expanded in the 1970s to add four new reactors (Bruce A) and underwent a second expansion in the 1980s to add four additional reactors (Bruce B).

Bruce Power recognizes that the Bruce Power site is located within the Saugeen Ojibway Nation Territory, the shared treaty and traditional Territory of the Chippewas of Saugeen First Nation and Chippewas of Nawash Unceded First Nation (Neyaashiinigmiing). Bruce Power is dedicated to honouring Indigenous history and culture and is committed to moving forward in the spirit of reconciliation and respect with the Indigenous Nations and Communities we work with. We are committed to strong and respectful relationships with the Saugeen Ojibway Nation (SON), the Métis Nation of Ontario Region 7 (MNO) and Historic Saugeen Métis (HSM).

Bruce Power assumed operational control of the nuclear generating stations at the Bruce Power site from Ontario Power Generation (OPG) in 2001 to become Canada’s only private sector nuclear operator. In December 2015, Bruce Power reached an agreement with the province to advance its Life-Extension Program and Major Component Replacement Project to refurbish its nuclear fleet and secure the Bruce Power site’s operation until 2064 and beyond.

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.

Through the Impact Assessment (IA), Bruce Power is beginning the planning and consultation work required to advance potential new nuclear power options on the Bruce Power site. This will preserve a valuable option for the province as it plans for the next two decades and beyond.

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION**PART A: GENERAL INFORMATION****1.0 THE PROJECT'S NAME, TYPE OR SECTOR AND PROPOSED LOCATION**

Bruce Power is evaluating the feasibility of expanding its nuclear fleet, to create an option for future electricity planning. Bruce C (the Project) will evaluate the impact of adding up to 4,800 megawatts electric (MWe) of nuclear capacity on the existing Bruce Power site. 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.

The Bruce Power site is located in the Municipality of Kincardine on the eastern shore of Lake Huron, approximately 18 kilometres (km) north of the town of Kincardine in Bruce County, Ontario. Bruce County is in the northern part of southwestern Ontario (see Figure 1).

The Bruce Power site currently hosts several licensed nuclear facilities, which include Bruce Nuclear Generating Station A (Bruce A) and Bruce Nuclear Generating Station B (Bruce B), each comprised of four CANDU reactors, as well as ancillary facilities. Several support facilities are also located on the Bruce Power site and are operated and maintained by Bruce Power, such as a Central Maintenance Facility (CMF), a Central Storage Facility (CSF), garages, warehouses, workshops, a sewage processing plant, and various administrative buildings (collectively known as Centre of Site). Bruce Power leases these portions of the Bruce Power site, including Bruce A and Bruce B, from OPG under a long-term lease agreement. The Bruce Power site also encompasses lands currently occupied by OPG, Canadian Nuclear Laboratories (CNL), and Hydro One. A site map of the Bruce Power site is shown in Figure 2.

Bruce Power is currently operating under a 10-year nuclear reactor operating licence for the Bruce A and Bruce B nuclear generating stations issued by the Canadian Nuclear Safety Commission (CNSC or the Commission) which is in effect until September 30, 2028 (PROL 18.03/2028 [R-5]). A public Commission Hearing is required to continue operations beyond this term. A mid-term update on Bruce Power's licensed activities was provided to the Commission in September 2023 and included opportunities for Indigenous and public consultation [R-6].

The Bruce Power site has been highly studied and characterized and has demonstrated over 50 years of safe nuclear power generation. Bruce Power's environmental monitoring program conducts extensive year-round sampling to verify the protection of the local environment. This includes water temperature and surface water quality sampling on site and in Lake Huron, and routine monitoring of soil, sediment, groundwater, vegetation, agricultural products, and wildlife. 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].

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

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

of potential constraints and opportunities at the Bruce Power site. The siting process was completed to support conceptual layout development and evaluate suitable areas for potential development. The siting process was completed in two stages, comprised of a Site Suitability Screening Analysis [R-8] and Site Options Analysis [R-9]. The siting process utilized GoldSET©, a web-based modeling software that integrates a multi-criteria analysis approach, as well as the Electric Power Research Institute's (EPRI) Siting Guide [R-10]. 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. The outcome of the above-described siting process was a site suitability map shown in Figure 3 identifying lands on the Bruce Power site that will be further assessed as part of the IA for the Project. These areas identify the maximum extent on site for all Project components and supporting on-site infrastructure. The Project may leverage existing structures on site including roads, parking lots, docks, warehouses, laydown areas, office buildings, labs, training facilities, domestic water supply and the wastewater treatment plant. The general area to be further assessed for new intake and discharge structures are also shown in Figure 3. Characteristics of proposed new intake and discharge structures (for example, locations) in Lake Huron will be informed by environmental and engineering studies, as well as input from Indigenous Nations and Communities. Alternative cooling strategies will be evaluated as part of the IA, as further discussed in Section 12.0. The siting areas will continue to be refined through engagement with Indigenous Nations and Communities and environmental and feasibility studies being completed to support the IA. Further information on activities, infrastructure, structures and physical works is provided in Section 9.0. Additional information on the Project's proposed location including site maps identifying the spatial relationship of the Project components are provided in Section 13.0.

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Figure 1: Location of Bruce Power

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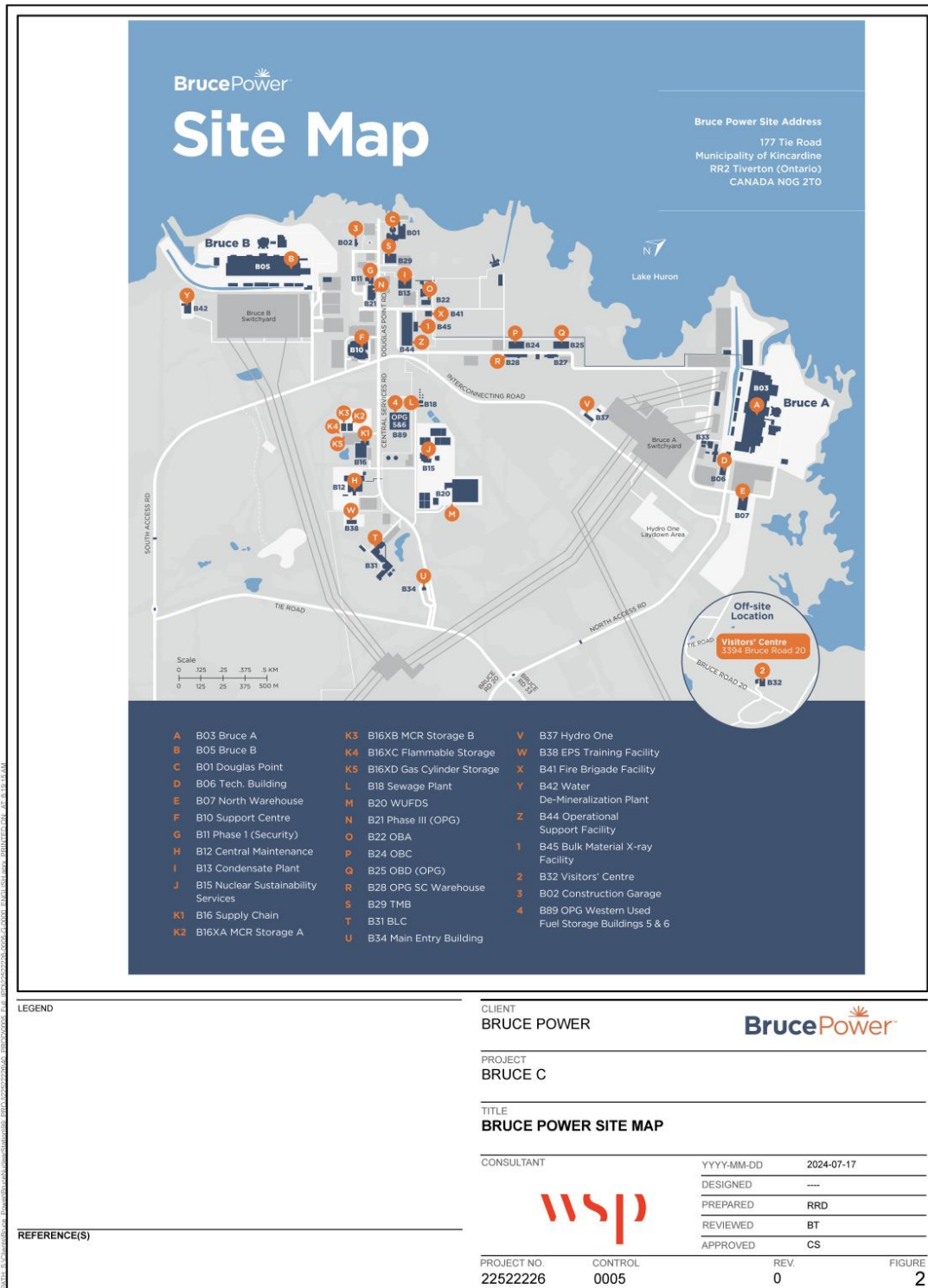


Figure 2: Bruce Power Site Map

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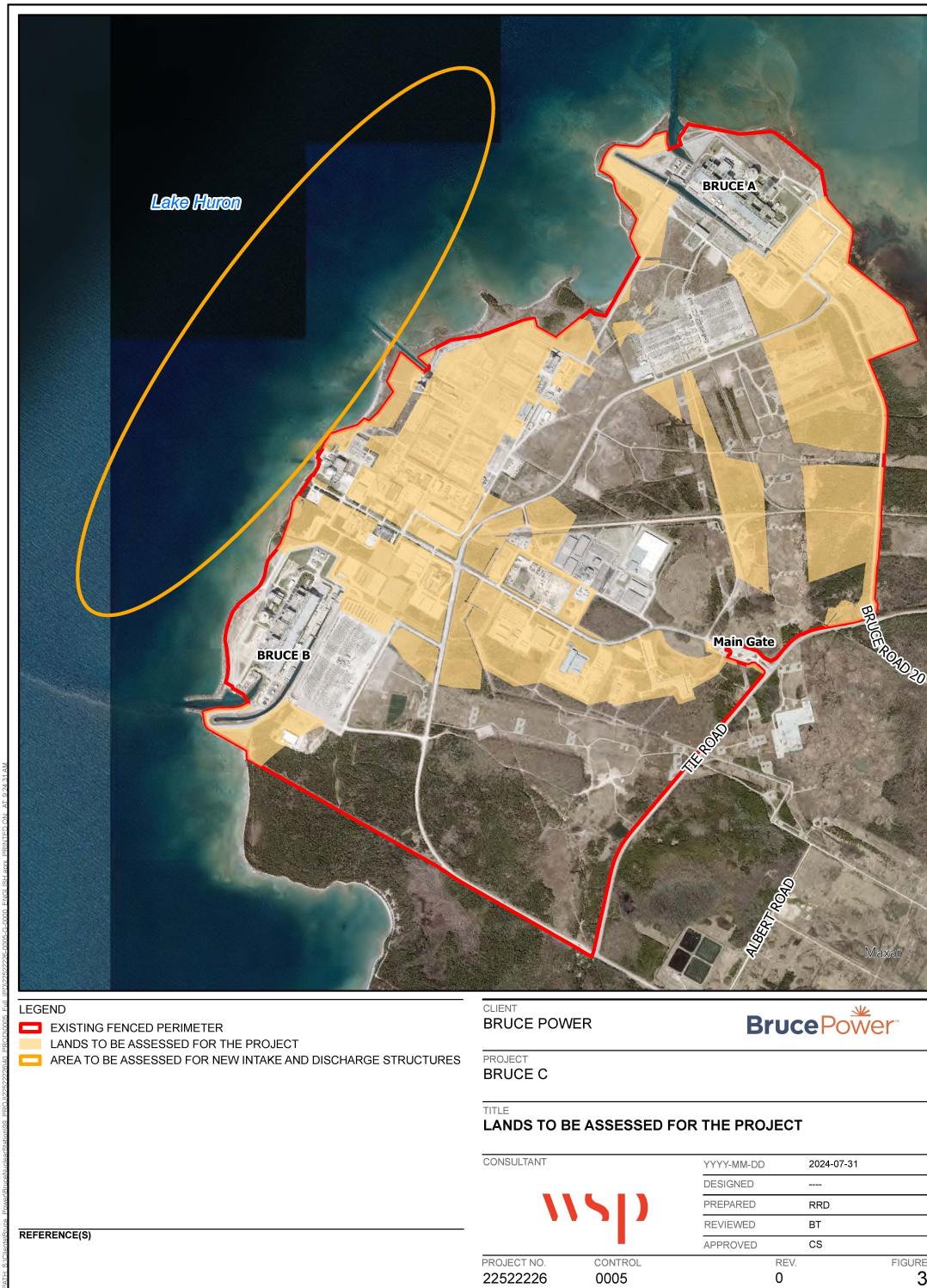


Figure 3: Lands to be Assessed for the Project

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2.0 PROPONENT CONTACT INFORMATION

Proponent's name: Bruce Power Inc.

Bruce Power is the proponent for the Project.

Primary Representatives of the Project & Contact information:

Bruce Power Executive Contact:

Jennifer Edey

Senior Vice President, Operational Services and Business Development

Bruce Power Primary Contact:

Weina Chong

Director, Business Development – NextGen, Business Development & Energy Innovation

<personal information removed> <email address removed>

3.0 EARLY ENGAGEMENT WITH JURISDICTIONS OR OTHER PARTY

Bruce Power owes much of its success to the support and commitment from surrounding communities. Bruce Power does not take this support for granted and is committed to earning the support of the community each and every day through continuous improvement and an ongoing focus on openness, transparency and strengthening the community. Bruce Power has a long history of engaging and supporting local communities surrounding the Bruce Power site and will engage with various interested parties, including workers, partners, municipalities, governments, and the public throughout the IA process. The following provides a summary of such strategies and protocols, as well as a summary of early engagement undertaken with any jurisdiction (as such term is defined in the IAA) or other party, including key issues raised and the results of the engagement, and a brief description of Bruce Power's plan for future engagement. Jurisdictions that have powers, duties, or functions in relation to the assessment of the Project's environmental effects is provided in Section 18.0. Engagement with Indigenous Nations and Communities is addressed separately in Section 4.0.

As part of relationship development through engagement, Bruce Power aims to facilitate the following with external interested parties and government with respect to Project development and regulatory processes:

- Understanding of Project details, how it will contribute to the province of Ontario's decarbonization goals, and regulatory process and requirements;
- A clear demonstration of how participation is reflected in processes and regulatory submissions; and
- Support of community sustainability and benefits to the province of Ontario and country from the Project.

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Bruce Power has existing Public Information Strategies and Public Disclosure Protocols established for existing operations. The Public Information and Disclosure Program complies with the requirements outlined in CNSC REGDOC-3.2.1 [R-11] and utilizes CNSC REGDOC-3.2.2 [R-12] as guidance publication. Implementation and maintenance of a public information and disclosure program is a condition of Bruce Power's CNSC Operating Licence (PROL 18.03/2028, Licence Condition G5, [R-5]). Bruce Power may leverage existing public information strategies to support the Project, such as community newsletters and existing social media channels; however, a Project specific engagement program has been developed for the Project and further discussed in the following sections.

3.1 Summary of Engagement Conducted to Date for the Project

Bruce Power is committed to proactive, open, and transparent engagement and will provide multiple opportunities for input, both in-person and virtually. Bruce Power will keep the public informed and engaged throughout the IA process and will provide regular updates about the proposed Project through its website, news releases, newsletters, social media, and videos.

The following summarizes engagement activities undertaken to date for the Project. A summary of engagement undertaken with Indigenous Nations and Communities is provided in Section 4.0. Bruce Power will continue to engage with Indigenous Nations and Communities, stakeholders, public, and government throughout the IA process.

On June 26, 2023, a quarterly environment meeting was held with CNSC, Environment and Climate Change Canada (ECCC), and Fisheries and Oceans Canada (DFO), where Bruce Power provided an overview of the IESO's Pathways to Decarbonization report, with focused discussion on the projection of additional nuclear capacity needed in Ontario by 2050.

On July 5, 2023, interested parties from local municipalities, Indigenous Nations and Communities, unions, suppliers, industry organizations and media were invited to attend a press conference on the Bruce Power site [R-13]. Ontario's Minister of Energy held a press conference to publicly announce Bruce Power's intent to advance the long-term planning and consultation work required to explore nuclear expansion on the Bruce Power site.

To date, for the Project, Bruce Power has completed a number of public engagement activities, including: Project information events, industry trade show presentations and information booths, presentations to local municipal governments, municipal government delegations, and other media events related to the Project. These engagement activities have included the following:

- Bruce C Project website to provide Project updates and information. Project website also provides an opportunity for interested parties to subscribe to receive Project updates (<https://www.brucepower.com/future-of-the-bruce-site/>);
- News releases and social media providing updates on the Project;
- Bruce C Port Elgin Project Office Grand Opening (November 15, 2023);
- Bruce C Project booklet published (November 2023);

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- Bruce C Community Information Sessions, which also included an overview of current operations at Bruce Power’s Visitor Centre and site tours advertised with local media and social media (November 19, 2023 and December 10, 2023);
- Presentation at Clean Energy Frontier Summit (January 19, 2024);
- Community Leaders Breakfast which included an update on the Bruce C Project and results of polling conducted (April 12, 2024);
- Bruce Power Community Update mailed to area residents (Fall 2023 and June 2024);
- Bruce Power and Project E-Newsletters to subscribed email addresses (June 2024);
- Project introductory video launched (June 2024);
- Delegations to local municipal councils (Municipality of Kincardine, Town of Saugeen Shores, Bruce County, Grey County, Huron County, Municipality of South Bruce);
- Presentations to local municipal staff (Municipality of Kincardine, Town of Saugeen Shores, Bruce County, Grey County, Huron County);
- Shared draft of Initial Project Description with local municipal staff (Municipality of Kincardine, Town of Saugeen Shores, Bruce County, Grey County, Huron County);
- An early engagement survey, accessible at the Community information sessions, linked in the community updates, posted on Bruce Power’s website or obtainable at the Visitor Centre, sought to understand the community’s preferred methods of learning about the proposed project, the topics they are most interested in, and their favoured channels for providing feedback;
- Reviewed public participation activities and feedback from previous nuclear expansion proposals;
- Table/booth at industry and municipal conferences (Clean Energy Frontier Summit, Rural Ontario Municipalities Association, Canadian Nuclear Association); and
- Table/booth at community events.

3.2 Summary of Key Interests and Issues Raised

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:

- **Project details:** includes purpose and need, technology, waste considerations and timeline;

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- **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.

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Table 1: Summary of Public Key Interests and Issues Raised in Pre-Planning Phase

Theme	Key Interest or Issue Identified	Current Plan to Address Interest or Issue
Project Details	<ul style="list-style-type: none"> • Interest in understanding the demand for electricity in the province and future projections. • Questions about how much capacity is being considered by this Project and whether more than 4800 MW should be considered now given the projected demand in the province. • Need information around Project timelines including when Project construction might begin. • Questions about what technologies are being considered/which technology will be selected. • Questions about where the proposed Project will be built and what locations are being considered on the Bruce Power site. • Questions about heavy water needs and plans to acquire heavy water. • Questions about the capacity of current transmission lines and the need/planning for additional transmission. • Questions about the cost of new build, who will finance, and potential ownership structure. <p>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. • 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>Project detail information has been included in this IPD to support many of the questions raised during the Pre-Planning Phase of the Project.</p> <p>Siting information has been included in Section 1.0 and 13.0 of the IPD. Additional information on the siting process will be provided in the Detailed Project Description or posted to the Registry once engagement has occurred.</p> <p>Information on waste alternative means has been included in Section 12.0.</p> <p>Additional information on heavy water consideration, transmission considerations, cost and ownership information and waste will be provided in the Impact Statement.</p>
Potential Cumulative Effects	<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 a workforce, housing and infrastructure perspective in order to understand the regional impacts of both projects. • 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 Waste Facility. 	<p>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>
Local Municipal Government and General Public Engagement	<ul style="list-style-type: none"> • Questions around the roles of Bruce Power and IAAC in public engagement. • Need for municipalities to receive financial support in order to participate in the Bruce C IA including socio-economic impact analysis. • Questions about how municipal government can be involved early and throughout the process so they can anticipate and plan for economic impact (growth/development) of the proposed Project. • Comments suggesting the need to include municipal councils in the IA process. • Requests made for financial support to local municipalities to document the data, projections, and analysis necessary to support municipal participation in the IA of the Project and ensure long-term prosperity. • Questions about the role of municipal governments in the federal IA process. • Suggest that the role of host municipalities in energy infrastructure projects needs to be considered and the full impact of complex infrastructure projects with national and provincial significance needs to be understood. • Comments that municipalities receive most of the pressure from the public on socio-economic issues even though they may be in provincial jurisdiction. • Suggest that a provincial multi-ministry table, led by the Ontario Ministry of Energy, be struck to engage with the host community and address provincial and inter-governmental socio-economic impacts of the Project. Such a table may also be able to assist in the anticipated interface with the Province through the federal IA process. 	<p>Bruce Power will continue to engage with local municipal government throughout the IA process.</p> <p>Bruce power is working with Bruce County, the Municipality of Kincardine and the Town of Saugeen Shores on a joint funding agreement to support capacity to address concerns raised during the Pre-Planning Phase related to lack of staffing and resources to fully participate in the IA process.</p> <p>Bruce Power has also committed to funding a Socio-Economic Support Study that will be led by Bruce County with engagement from the Municipalities of Saugeen Shores and Kincardine. The Socio-Economic Support Study will aim to establish workforce and population projections based on the Bruce C Project, to support growth management work related to allocation of population and review of land supply needs for commercial and residential development. The Study will also support an understanding of delivery services at a County and municipal level and assess infrastructure and service gaps that fall within County and municipal service</p>

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Theme	Key Interest or Issue Identified	Current Plan to Address Interest or Issue
	<ul style="list-style-type: none"> Comments that the following guiding principles be used as the foundation for municipal engagement for new nuclear projects: <ul style="list-style-type: none"> Engage municipalities in the process. Access to expertise and decision-makers is central to ensuring local priorities meet national interests. Create economic opportunities in the local community. Work with the local municipality to understand local economic development plans and the potential role of the project. Provide resources to the community to participate in the project. Ensure sufficient resources to ensure sustained engagement and address any needs of the region based on the project. Protect human health and the environment. Municipal leaders are charged with the health, safety and welfare of their communities, necessitating early engagement in any decision-making processes related to nuclear facilities. Educate and train the workforce. Educating and training the workforce is critical for any long-term project. Comments that municipalities are working to support the principle that growth pays for growth, rather than making existing homeowners pay for it through increased property taxes and user fees. Municipalities are generally set up with staff and access to experts to review routine development proposals, like plans of subdivision, and have an established fee structure that provides compensation for municipal staff time and consultants. New nuclear development is not a routine development and building a knowledge base and understanding of the process to help support community engagement requires increased capacity. Concerns raised about engagement fatigue and the capacity to participate given other large infrastructure projects in the region. Comments about the importance of engagement opportunities for youth given that the Project will be part of their lifetime. 	<p>delivery framework to meet growth associated with the Project. The Study will be integrated into the Impact Statement for the Project.</p>
Environment	<ul style="list-style-type: none"> Questions about what is meant by clean energy and decarbonization. Suggest considering existing local climate change strategy plans/initiatives in the Project IA. Suggest considering existing natural heritage analysis in the Project IA. 	<p>Project detail information has been included in this IPD to support many of the questions raised during the Pre-Planning Phase of the Project.</p> <p>Additional information will be provided in the Detailed Project Description or posted to the Registry once engagement has occurred, and also included in the Impact Statement for the Project.</p>
Human Health and Community Wellbeing	<ul style="list-style-type: none"> Comments about the value of recreation and use of trails at Inverhuron Provincial Park. Comments about the enjoyment of fishing around Bruce Power outlets. Comments related to the potential effects of the Project (for example increased traffic and population) on quality of life and recreation. <p>Safety, Security and Emergency Management</p> <ul style="list-style-type: none"> Questions about how the proposed Project may impact emergency preparedness and how any additional emergency response resources will be addressed. Comments that the increase in the size, scale and generating capacity at the Bruce Power site will increase demand for emergency management and require updates to emergency plans. Suggest that the proposed Project will require increased engagement with Emergency Management Ontario, OPG, Bruce Power and NWMO, area municipalities and the County regarding nuclear safety, training exercises, emergency response and community preparedness. Comments about criminal activity related to more transient population and potential increased demand for police services. Comments that the Project will increase demand for fire services and protection, including fire training. <p>Traffic</p> <ul style="list-style-type: none"> Need for more transportation-related Project information including an understanding of what is coming in and out of site; weights and volumes of goods. Comments that the proposed Project is anticipated to increase traffic volumes with workforce and construction traffic carrying supplies, material and equipment and that local road infrastructure may need to be improved. Suggest a roads and traffic study be required to determine requirements for potential widening and rehabilitation or reconstruction of all types of highways to ensure integration of design. Concerns about road safety due to increased traffic especially on Highway 21 between Kincardine and Port Elgin, problematic intersections, and school areas. Suggest that the Project will need to engage the Ministry of Transportation, Bruce County and lower tier municipalities because the proposed Project may have an impact on infrastructure and road networks. 	<p>Project detail information has been included in this IPD to support many of the questions raised during the Pre-Planning Phase of the Project. As part of the Project, Bruce Power will be completing a Transportation Planning Assessment. A Traffic Impact Study Update was completed in 2017 to capture traffic associated with ongoing operations and Major Component Replacement. An updated assessment will be completed for the Project which will identify baseline operation requirements and cumulative impacts resulting from the Project.</p> <p>Additional information will be provided in the Detailed Project Description or posted to the Registry once engagement has occurred, and also included in the Impact Statement for the Project.</p>

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Theme	Key Interest or Issue Identified	Current Plan to Address Interest or Issue
	<ul style="list-style-type: none"> • Suggest that the Project engage the Ministry of Transportation early as part of the Project to consider intersection upgrades on Highway 21. • Need to assess the suitability of a haul route for movement of construction equipment related to the Project. Consideration should also be given to the movement of nuclear waste off site in the future. • Comments that increased traffic could lead to unsafe conditions, particularly for vulnerable road users like cyclists and pedestrians. 	
Socio-Economic Conditions	<ul style="list-style-type: none"> • Comments around the need to address the potential impacts of the Project on the local economy including employment, local housing, local businesses, and means to mitigate adverse effects/enhance positive effects. • Question around how socio-economic impacts will be assessed and addressed noting the need for additional support from provincial and federal governments. <p>Local Labour Force</p> <ul style="list-style-type: none"> • Comments that hiring skilled trades, whether directly or contracting as a local supplier, is a challenge across the region as local businesses, organizations and home builders can't compete wages offered by nuclear sector. • Suggest that the full, regional workforce continuum is considered when completing the socio-economic impact study for the Project. The Project has the potential to create new job opportunities which may require engagement of workforce who have not traditionally been part of the energy sector. The Project could make it difficult for other employers in the region to fill positions. • Comments about the current competition for workers in the region and suggest considering the needs of businesses, suppliers and unions. • Need to consider impacts (both positive and negative) on other sectors like agriculture and tourism. <p>Income</p> <ul style="list-style-type: none"> • Comments that any negative socio-economic impacts of the Project in Kincardine, Saugeen Shores and surrounding communities have the potential to impact the demand for County delivered human services including children's services; housing facilities; community housing support services; income & support services; and strategic community initiatives. Any consideration of community benefits to mitigate potential risks to the community must address the increased demand for human services delivered by the County. • Comment that the need and demand for affordable housing units across the region is increasing. The proposed Project may increase pressure on rent and limit ability for households with lower incomes to find secure housing options, which in turn puts pressure on the counties to deliver affordable housing in community. • Need to consider potential Project impacts on cost of living and income disparity due to high wage earners in nuclear industry. • Comments about the impact of high wage earners on housing availability, prices and development, and shortage of affordable and attainable housing. Market demands and return on investment for private developers continue to drive higher priced homes. • Comments that the lack of public transit in the region creates challenges for employment. <p>Employment</p> <ul style="list-style-type: none"> • Comments expressing interest in job opportunities related to the Project. • Comments that the proposed Project would provide opportunities for young people to stay and work in this region. <p>Education and Childcare</p> <ul style="list-style-type: none"> • Comments that the Project may increase demand for education, schools and childcare. • Comments that provincial investment is needed in public and high schools in most immediately impacted communities (Kincardine and Saugeen Shores) to meet current needs. • Comments that funding for school capital project is based on current population rather than population projections which can result in a mismatch of student spaces when capital projects are executed by the school board. Suggest that a different provincial funding model be considered to recognize forecasted growth as part of the formula for investment in new schools. • Comments that the anticipated increase in workforce related to the Project will increase demand for childcare. Most current programs like daycares, before and after school programs, and summer camp programs are already at capacity with long wait lists. There is a shortage of trained Early Childhood Educators to fill current childcare spaces and a demand for more childcare than is currently able to be delivered. Need to continue to offer Early Childcare Educators training programs in the area to address this workforce shortage. 	<p>Bruce Power has completed a Municipal Socio-Economic Existing Conditions Report to support the Impact Statement by characterizing community social, economic, and human health conditions, in addition to non-traditional land and resource use, which could experience effects as a result of the Project.</p> <p>Interviews to gather information about existing socio-economic conditions were conducted virtually in December 2023, and January and April 2024. Key informants interviewed for the Project, included representatives of the following organizations. Additional key informants interviewed for the Project provided information anonymously.</p> <ul style="list-style-type: none"> • Bluewater District School Board; • Brightshores Health System; • Bruce County; • Grey County; • Huron County; • Bruce-Grey Catholic District School Board; • Georgian College; • Municipality of Kincardine; • South Bruce Grey Health Services; and • Town of Saugeen Shores. <p>Bruce Power will engage with SON, HSM and MNO, to develop scope characterizing health, social, economic conditions, and Indigenous Knowledge and/or other information to be defined by each Indigenous community.</p> <p>Additional information will be provided in the Detailed Project Description or posted to the Registry once engagement has occurred, and also included in the Impact Statement for the Project.</p>

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	<ul style="list-style-type: none"> • Suggest incorporating daycare facilities into any new build project is key to meet local demand for childcare. <p>Health care</p> <ul style="list-style-type: none"> • Comments about the lack of family doctors in the area. • Comments that the Project may increase need and demand for healthcare services, hospital facilities, physicians, nurses, healthcare workers, locums and locum housing. • Comments that anticipated workforce and population growth associated with the Project may impact the delivery of paramedic services, including response times. An assessment of population growth will need to consider if additional paramedic services are required to meet the demand in the area including considering additional staffing, additional ambulances and possibly new bases. • Comments that an increase in population, who may not have their own doctor, may increase demand for community paramedicine programs. Demand for community paramedicine has been increasing rapidly in recent years. • Comments that provincial investment in health care services and hospitals is critical across the area. Municipalities are increasingly funding services and investment in health care facilities and equipment that are under a provincial mandate. The Project may increase demand for local funding directed to healthcare. • Comments that medical care options are needed for temporary and transient construction workers and those without family doctors. Unlike more urban communities, this region does not have walk-in clinic options that may lessen burden on hospital emergency rooms. • Comments that attracting and recruiting physicians has been recognized as a community need by Bruce Power and has increasingly become a municipal function. Partnership on physician recruitment between Bruce Power and municipalities is appreciated and will need to be sustained to prepare for growth associated with the Project. • Comments that growing the healthcare workforce locally will be key to maintaining and delivering services locally. <p>Housing</p> <ul style="list-style-type: none"> • Need information to understand the pressures the Project may put on local and regional housing supply during both the construction and operational phases of the Project. • Comments that there is a lack of housing options to meet current housing needs. Historical housing stock of single-family homes doesn't meet the housing needs of a transient workforce that is typically looking for rental units. • Comments that workforce and population growth associated with the proposed Project will impact the balance and supply of housing and have significant short and long-term housing implications for the region. • Suggest that a coordinated effort between Bruce Power, the County and municipalities, and cooperation of local developers is needed to ensure a positive range affordable housing options for existing community residents as well as new workers attracted to the area. • Comments that Bruce Power's Major Component Replacement Project is the third largest infrastructure project in Canada and there is no workforce housing program associated with the Major Component Replacement Project. • Suggest that a workforce housing strategy should be required for the Project. Provision of workforce housing solutions, especially for temporary construction workers, should be explored by large scale employers. <p>Population growth and development</p> <ul style="list-style-type: none"> • Need for information to complete growth management strategy and determine forecasted growth to ensure local municipalities have enough designated land for growth within their settlement boundaries. Through land use planning services provided by the County, a comprehensive review and assessment of settlement boundaries in local and County planning documents will be required. These reviews will inform updates required to the County Official Plan, local Official Plans and Zoning By-laws. • Comments that the Project will increase demand for land-use planning for commercial, industrial, institutional, residential growth and community spaces to support project-related growth. • Need baseline data on our communities, including the impact current temporary workers are having on the area, in order to understand what the potential impacts of the Project will look like in the future. • Comments about the need to support and develop welcoming communities for a diverse workforce. • Comments that anticipated growth related to the Project may increase demand for library, arts and culture and museum services. 	

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Theme	Key Interest or Issue Identified	Current Plan to Address Interest or Issue
	<ul style="list-style-type: none"> • Comments that housing growth will create demand for municipalities to provide recreational services such as community centres, sports centres, parks and recreational programming. • Comments that the Project is anticipated to put pressures on municipal infrastructure and services. • Comments that the Project will increase demand for water and wastewater capacity to support population and community growth. • Comments that support is needed to ensure municipalities and the County receive funding to support growth beyond the tax levy on existing residents. • Comments that increasing the supply of housing is also an infrastructure challenge. The Federation of Canadian Municipalities identify, on average, it costs \$107,000 per housing unit for municipalities to provide the infrastructure (municipal water, sewer, storm sewer capacity, and recreational facilities) needed to support growth. • Comments that the Project may increase demand for landfill, waste management and recycling services. • Comments that an increase in temporary and permanent residents in the area may put increased demand on existing broadband and cellular networks that are already inadequate. • Comments that the Project will increase demand for public transportation. <p><u>Training and Business Opportunities</u></p> <ul style="list-style-type: none"> • Comments that the Project will increase demand for economic development support, in particular with respect to labour force. • Comments that the Project may increase opportunities and investment in the area which will require planning for industrial and business lands. • Comments that the Project may lead to land speculation and/or landowners refusing to develop despite interest from buyers/developers. • Need information about the impact of the Project on local businesses and nuclear suppliers in the region. • Need information about the needs of the isotope industry locally to understand the economic impact associated with the Project. • Questions about the types of training, qualifications, and skills that will be required over the duration of the Project and how Bruce Power plans to address challenges in attracting and developing the necessary workforce. • Comments that without any permanent post-secondary institutions within Bruce County, many youths need to travel outside the area to complete post-secondary education. Providing local training option to retain youth would be desirable. • Suggest that youth retention and attraction are issues to be addressed to secure a workforce for future jobs. 	

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To ensure that engagement is focused and relevant, Bruce Power is creating a list of interested parties, populations, or individuals that will be engaged with as part of public engagement. This includes those who could be directly or indirectly affected by the Project such as local municipalities, residents in close proximity to the Bruce Power site, businesses and business groups, nuclear sector organizations, community groups, interest groups, and others.

As the public is generally already familiar with Bruce Power, we will continue to build on the positive reputation and presence we have built in the community. We will provide information and opportunities to learn and comment about the potential challenges and opportunities related to the Project.

To support further engagement on the Project, plans for public engagement activities include:

- Update the Project website with Project content and engagement opportunities;
- Advertise public engagement opportunities with local media and social media;
- News releases and social media;
- Site tours;
- Emails/Letters;
- Deliver Bruce Power Community Update and Project Update newsletters to area residents;
- Bruce Power and Project E-Newsletters to subscribed email addresses;
- Project general inquiry email address;
- Utilize digital engagement tools;
- Develop communications tools such as infographics, plain language summaries, factsheets and videos;
- Schedule open houses to share information about the Project;
- Schedule focused workshops to engage with organizations on topics such as socio-economic conditions, human health and well-being, and the environment;
- Offer Project coffee chats;
- Delegations to local municipal councils;
- Presentations and meetings with community groups;
- Table/booth at industry and municipal conferences;

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- Table/booth at community events; and
- Regional polling (Fall 2024).

The Canadian Government has introduced Gender-based Analysis Plus (GBA+) requirements that state gender, diversity, and intersecting identities must be considered in the IA of designated projects under section 22(1)(s) of the IAA. GBA+ is an analytical process for assessing systemic inequalities. GBA+ considers intersecting identity factors such as age, sex, gender, race, culture, ethnicity, language, education, income, and mental or physical disabilities, and seeks to understand how individuals may experience policies, programs, and initiatives differently [R-14]. Bruce Power will use GBA+ to inform engagement strategies and to assess potential impacts of the Project.

4.0 EARLY ENGAGEMENT WITH INDIGENOUS NATIONS AND COMMUNITIES

Bruce Power is committed to early, frequent, community driven engagement to support collaboration and informed decision making with Indigenous Nations and Communities. As part of engagement and relationship development, Bruce Power's approach to engagement aims to facilitate:

- Understanding of the Project details, regulatory process and requirements;
- Greater organizational awareness and understanding of each Indigenous Nation and Community's interests, concerns, and priorities with respect to engagement on Project development and regulatory processes;
- Collaborative development of consultation and engagement processes, including approaches to the assessment of cumulative effects, potential impacts to rights, environment, and social, economic and health conditions, and mitigation/management measures;
- Support for Indigenous-led community engagement and study of the Project;
- A clear demonstration of how participation of Indigenous Nations and Communities is reflected in processes and regulatory submissions; and
- Potential benefits for Indigenous Nations and Communities from the Project such as training, jobs, and procurement opportunities.

Bruce Power recognizes that the Bruce Power site is located within the SON Territory (Figure 4), the shared treaty and traditional Territory of the Chippewas of Saugeen First Nation and Chippewas of Nawash Unceded First Nation (Neyaashiinigmiing). Bruce Power is dedicated to honouring Indigenous history and culture and is committed to moving forward in the spirit of reconciliation and respect with the Indigenous Nations and Communities we work with. We are committed to strong and respectful relationships with the SON, MNO, and HSM (Figure 5).

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Bruce Power has a history of engagement with SON, HSM, and MNO related to the Bruce Power site and will continue to engage with these Indigenous Nations and Communities for the Project. Bruce Power is progressing with the IA process in a transparent manner. Should additional Indigenous Nations and Communities be included in IAAC's Indigenous Engagement and Partnership Plan, Bruce Power will engage consistent with the approach described above.

Bruce Power has engaged SON, MNO, and HSM with respect to its operations, licensing and permitting for many years and has established protocol/relationship agreements that facilitate ongoing engagement and the advancement of shared priorities by:

- Supporting the framework for information-sharing, engagement, and collaboration;
- Providing annual capacity funding to support engagement activities and other agreed-upon work, as well as providing additional capacity funding to support engagement in regulatory processes; and
- Setting out a process to collaborate in several areas including environment, training, employment, and business development.

Bruce Power's relationships with local Indigenous Nations and Communities are of the utmost importance and as such, Bruce Power remains committed to meaningful engagement and collaboration in shaping the future of the Bruce Power site and ensuring participation in and benefit from any future development.

Bruce Power acknowledges that Indigenous Knowledge related to the Project is an important component of the IA. Bruce Power looks forward to continuing to discuss and collaborate on Project specific engagement plans with each Indigenous Nation and Community and will utilize the IAAC's Indigenous Engagement and Partnership Plan to aid in the development of engagement strategies.

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.

In December of 2022, the IESO released the Pathways to Decarbonization Report. The report provided options for how Ontario could decarbonize its grid and build up energy infrastructure to meet anticipated energy demands. As part of this report, Ontario identified a need to build new nuclear, which has a potential impact on Bruce Power. Bruce Power recognized the importance of engagement and participation of Indigenous Nations and Communities in the decarbonization pathways laid out by the government, and in particular the consultation process established by the provincial government coming out of the Pathways report. As such, starting in late 2022 and early 2023, Bruce Power started engaging with SON and HSM on the Pathways report. The focus of these discussions was on the practical implications of the Pathways report and opportunities to participate in the consultation process.

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As 2023 progressed, Bruce Power met regularly with each of SON and HSM as the government consultation closeout period approached and Bruce Power worked to finalize its position. In late spring, Bruce Power met with each of SON and HSM to share Bruce Power's request of the government – which was to conduct an IA for new nuclear power options on the Bruce Power site and for that process to be cost recovered.

Ahead of the July 5th announcement of provincial support for the IA, Bruce Power spoke with the leadership of each of SON and HSM and extended invitations to attend and speak at the announcement. Following the announcement, Bruce Power met with each of SON and HSM to discuss next steps and to establish a process for engagement in the Pre-Planning Phase of the IA. Both SON and HSM have expressed an interest in engaging on the IA for new nuclear power options at the Bruce Power site and Bruce Power provided an early draft of the IPD to each of SON and HSM on September 14, 2023 for their review. An updated draft of the IPD was shared with SON and HSM on March 21, 2024, and April 9, 2024, respectively.

It is Bruce Power's intent to continue to work collaboratively with each of SON and HSM throughout the IA process. The company seeks to collaboratively develop engagement plans, provide capacity funding to support meaningful engagement with Bruce Power and also to support the engagement that each of SON and HSM will complete with their members. A detailed description of known interests and concerns is provided in Section 21.0.

SON and HSM are already familiar with Bruce Power and its operations through our ongoing engagement, and we will continue to strive to strengthen our relationships, engagement, and collaboration. We plan to meet regularly, provide information and opportunities to learn, provide feedback/input and collaborate to address interest and concerns about the potential challenges and opportunities related to the Project.

We are still working with each of SON and HSM to develop specific engagement plans to inform the types of community engagement Bruce Power will do directly and which types of community engagement and communications will be Indigenous-led on the Project. It is important to note the public engagement plans and resources in Section 3.0 will also be available to Indigenous Nations and Communities, in addition to tailored resources and approaches to engagement developed collaboratively.

4.1 Summary of Project Specific Engagement with Saugeen Ojibway Nation

The following section provides a summary of Project specific engagement with the SON, a summary of key interests and issues raised by SON, and a summary of future planned Project specific engagement.

On September 18, 2023, after Bruce Power provided the early draft IPD, Bruce Power met with SON Environment Office (SON EO) representatives for a routine quarterly meeting. During this meeting, Bruce Power provided an overview of the IA process. The SON EO indicated in the meeting the need for the IPD to be discussed with the SON Joint Council before further engagement. Bruce Power was informed that SON required more time to determine the process for engagement between SON and Bruce Power on the IPD and the IA more broadly and Bruce Power delayed the submission of the IPD to provide additional time.

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Beginning in December 2023, SON and Bruce Power have been meeting regularly to develop a path forward for meaningful engagement on the IA. SON and Bruce Power have been meeting on a minimum-monthly basis at a leadership level to develop a framework for a renewed relationship, which includes engagement on the IA. The intent of the renewed framework is to ensure that SON's well-documented and ongoing concerns related to the environmental and potential rights impacts of the Bruce Power site are addressed where possible, and that other interests and benefits such as economic participation, training, employment and business opportunities can progress. This renewed framework will include a collaboratively developed process for engagement on the IA. We are working with SON to ensure that Bruce Power provides the necessary capacity funding to support SON and Bruce Power's engagement, SON's own process to assess potential new nuclear in SON Territory and SON's engagement with SON Membership on the potential Project. We are also discussing approaches for both collaborative and SON-led environmental research related to ongoing operations and the potential Project.

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.

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.

An updated version of the IPD was shared with SON on March 21, 2024, following a March 20, 2024, monthly meeting with SON leadership to discuss the IPD and IA process. SON has not provided any specific feedback on the content of the IPD beyond the general concerns that have been raised with respect to the potential Project, as set out above. Bruce Power has advised SON that the IPD will be submitted in summer 2024, and we plan for continued and regular engagement on the IA.

4.1.1 Planned Project Specific Engagement

SON and Bruce Power will continue to work together to develop the plan for Project-specific engagement. We plan to actively engage with SON leadership and SON EO on a regular basis on areas of interest including siting, Plant Parameter Envelope (PPE), reactor technologies, environmental impact, cumulative effects, mitigation measures, Best Available Technologies Economically Achievable (BATEA), social, economic and health, economic participation, training, employment, and business opportunities. We are working together to develop SON-Bruce Power working groups so that we can engage in these items more effectively and with higher frequency. SON has expressed interest in developing a SON-led process to engage with SON Membership on the Project, and we will respect SON's decisions on how Bruce Power engages on the Project with the SON Membership directly. We will also collaboratively develop plans to investigate and better understand environmental and cumulative effects from a Two-Eyed Seeing Approach. This approach will ensure SON's

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Knowledge Systems are represented in a way that SON supports. We will take SON's lead on areas that they will work on independently and provide capacity support to facilitate their work.

Engagement and collaboration with SON is important in the development of the IA and the potential Project to ensure we proceed in a way that avoids, minimizes and mitigates impacts to the environment, SON rights and interests, and provides opportunities for SON benefit.

4.2 Summary of Project Specific Engagement with Historic Saugeen Métis

The following section provides a summary of Project specific engagement with HSM, a summary of key interests and issues raised by HSM, and a summary of future planned Project specific engagement.

Following the receipt of the early draft IPD, Bruce Power and HSM met on September 20, 2023 for a quarterly meeting. During this meeting, Bruce Power provided an overview of the IA process and requested more frequent meetings to discuss items related to the IA. It was agreed by HSM that more frequent touch points would occur on approximately a bi-weekly basis.

On October 10, 2023, Bruce Power received initial feedback on the IPD from HSM in the morning and met with HSM that afternoon to go through the feedback provided. Bruce Power took the initial feedback and incorporated it into the IPD. On April 9, 2024 Bruce Power provided a revised IPD to HSM and included a response to how their initial comments were addressed. Additional feedback from HSM was provided to Bruce Power on May 9, 2024 which expressed on-going concerns with the current thresholds for effluent temperature, fish impingement and entrainment, the lack of monitoring for aquatic invertebrates, and the long-term reduction and safe storage of waste. HSM expressed the need for further clarity and engagement on the development of the PPE approach and an interest in learning more about the "bounding plant parameter envelope" approach, the "available set of reactor designs", and the potential impacts of what existing structures may be leveraged to support the Project. As a result of this comment from HSM, Bruce Power provided an initial presentation to HSM on June 27, 2024. Bruce Power will continue to discuss these issues with HSM through its continued engagement on the Project.

4.2.1 Planned Project Specific Engagement

Bruce Power and HSM plan to continue to meet at their established frequency and will conduct ad-hoc meetings when requested by HSM to further discuss areas of concern and interest.

4.3 Summary of Project Specific Engagement with Métis Nation of Ontario.

Bruce Power and MNO have had frequent engagement on the IPD since initial receipt in September of 2023. At the request of MNO, a summary of engagement is not included in the IPD. Bruce Power will continue to engage routinely with MNO throughout the duration of the process.

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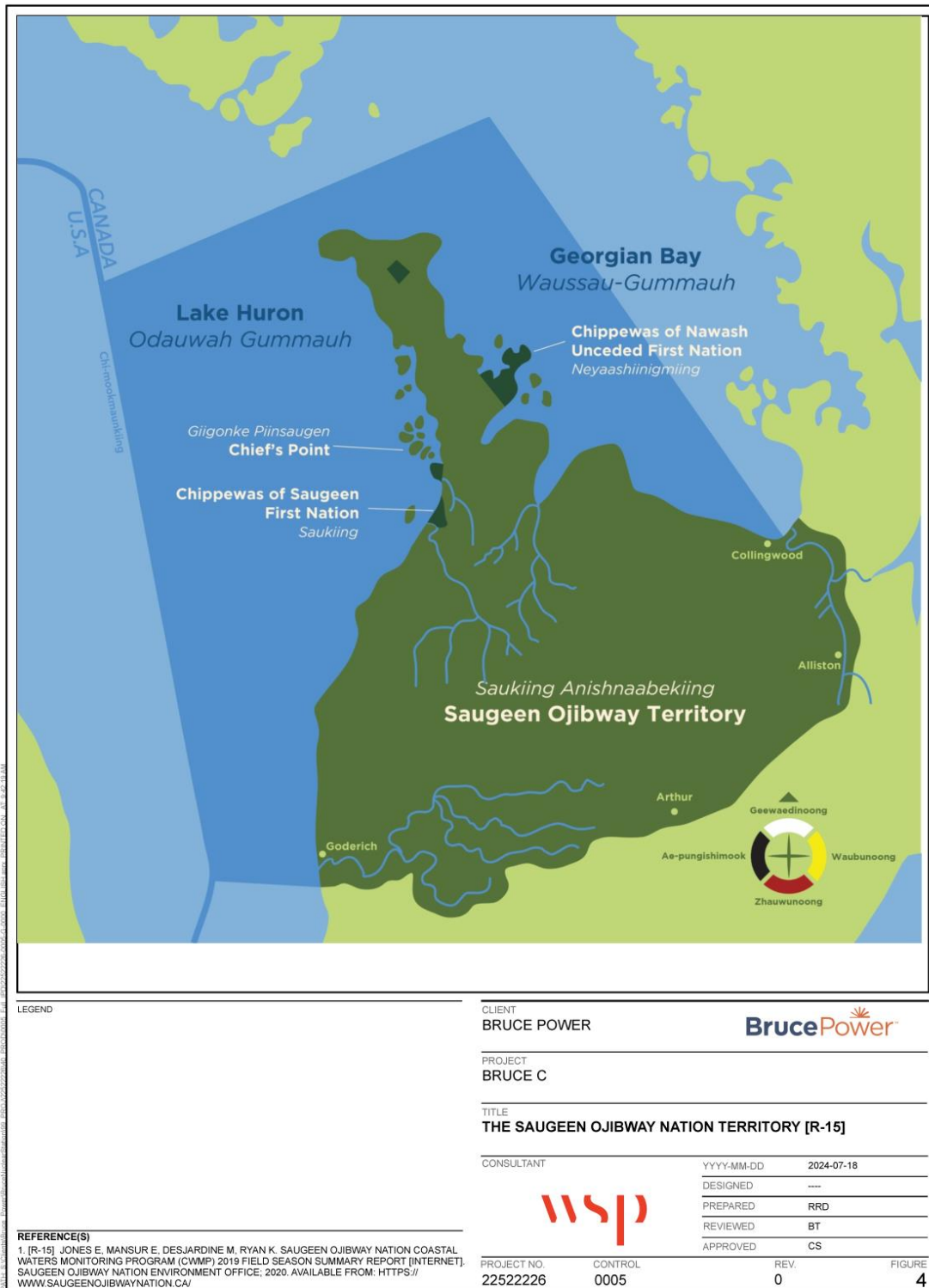


Figure 4: The Saugeen Ojibway Nation Territory [R-15]

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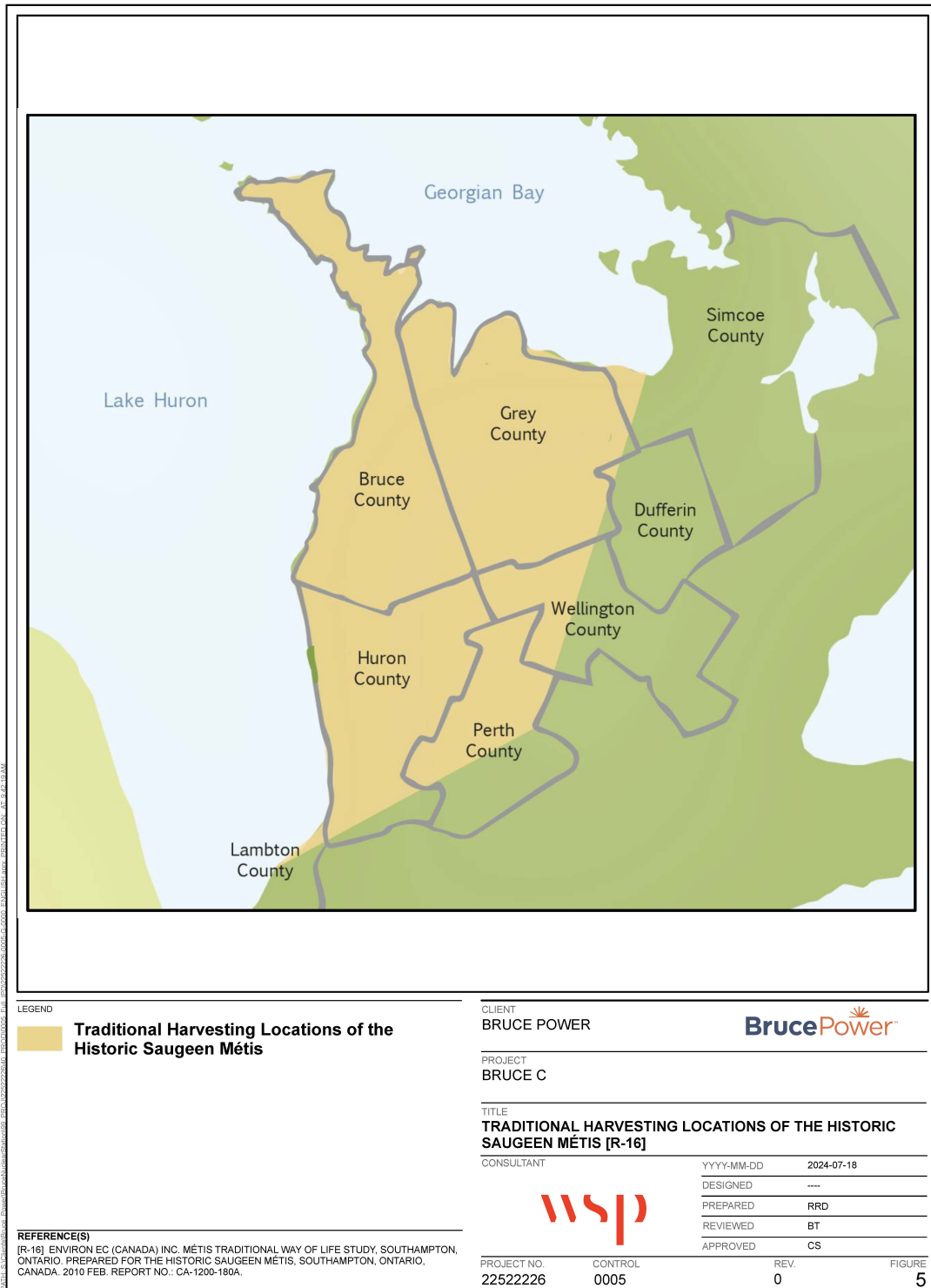


Figure 5: Traditional Harvesting Locations of the Historic Saugeen Métis [R-16]

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5.0 STUDIES OR PLANS RELEVANT TO THE PROJECT**5.1 Historical Context****Pre-Nuclear Studies, 1954-1971**

The initial studies at the Bruce Power site began in 1954. These were conducted by the University of Waterloo and University of Toronto to study large lake limnology (lake chemistry and currents; water temperatures; wind effects on currents and water temperatures) [R-17]. The University of Toronto established the Great Lakes Institute on the north shore of Baie du Doré and started studies in 1961, one objective being to establish a baseline against which to measure future changes to the fish community that might occur due to operation of Canada's first commercial nuclear generating station at Douglas Point Nuclear Generating Station and anticipated future facilities [R-18]. The annual monitoring included fish sampling via transects from the nearshore to open waters at depth. Sampling occurred over 10 years (1963-1972) and the major species found were Alewife, Lake Chub and Longnose Sucker (where Alewife represented 49% of the catch) [R-18].

Pre-Operational, Commissioning, Post-Operational Studies of Bruce A and Bruce B, 1973-1989

A series of environmental monitoring studies (the Bruce A and Bruce B Effects Programs) [R-19][R-20] were conducted by Ontario Hydro from 1973-1989 as a condition of the wastewater thermal discharge Certificate of Approval from the Ontario Ministry of the Environment (MOE) for new nuclear projects. These were designed to evaluate the operational effects on the atmospheric, terrestrial, and aquatic environments in three 3-year stages (pre-operational, commissioning and post-operational) for Bruce A and Bruce B generating stations. Atmospheric monitoring throughout this period included studies on hydrogen sulphide, sulphur dioxide, weather (wind speed, wind direction, air temperature and pressure), noise and odour, radionuclides and radiological receptors (i.e., air, precipitation, milk, surface water, drinking water, ground water, and crops). Early terrestrial studies included effects of conventional and radiological emissions on vegetation. While radiological monitoring remained constant through these years, the conventional terrestrial monitoring program expanded to include wildlife (e.g., deer, birds) and characterization of vegetation and wetland species. Aquatic studies were the focus throughout this period driven by regulatory and academic interests about the effects of cooling water withdrawal and thermal discharge. Aquatic monitoring included: water chemistry, temperature, substrate mapping, sedimentation, attached algae and macrophytes, phytoplankton, zooplankton, zoobenthos, juvenile and adult fish.

In addition, compliance monitoring of selected atmospheric emissions and liquid effluents began in 1973 and continued for the operating life of the stations. These are ongoing, routine monitoring programs conducted to ensure that operations are within regulatory requirements and are conducted independent of the above noted effects-monitoring studies.

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5.2 Bruce Power Led Assessments

The Bruce Power site has been extensively studied and characterized. Since Bruce Power took over operations of the Bruce Power site in 2001, Environmental Assessments and ongoing environmental protection programs (e.g., Environmental Risk Assessment (ERA) [R-7] have been conducted at key licensing and operational milestones including:

- 2001 Environmental Assessment Study Report for the Bruce A Units 3&4 Restart, under Canadian Environmental Assessment Act (CEAA) [R-21];
- 2004 Environmental Assessment Study Report for the Bruce B New Fuel Project (CEAA) [R-22];
- 2006 Environmental Assessment Study Report for the Bruce A Refurbishment Project for Units 1&2 Restart (CEAA) [R-23];
- 2008 Environmental Impact Statement (EIS) for the Bruce New Nuclear Power Plant Project (eventually withdrawn, CEAA) [R-24];
- 2013 Screening Level Environmental Risk Assessment [R-25];
- 2015 Preliminary Quantitative Risk Assessment (PQRA) [R-26];
- 2016 Bruce A Refurbishment for Life Extension Environmental Assessment Follow up Monitoring Program [R-27];
- 2017 Environmental Risk Assessment [R-28];
- 2022 Environmental Risk Assessment [R-7];
- 2021, 2022 and 2023 Annual Bruce Power Environmental Protection Reports [R-29]–[R-31]; and
- 2023 Annual Bruce Power Sustainability Report [R-32].

All of the above studies are supported by various technical documents. With the completion of each of the above Environmental Assessments, progressively more environmental data has been collected for the Bruce Power site. Follow-up monitoring has confirmed that effects were as predicted in the Environmental Assessments. The collection of this wealth of information has enabled Bruce Power to inform and refine the ERA. Bruce Power anticipates that such information will have a similar beneficial impact on its IA efforts.

The ERA at the Bruce Power site is updated every five years and includes both a retrospective examination of environmental risk over the last five years and a prospective look at the potential environmental effects of proposed activities on site in the next five years. The 2022 ERA [R-7] was found to be compliant with the requirements of Canadian Standards Association N288.6-12 Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills [R-33] and was accepted by the CNSC in 2023.

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The results of the 2022 ERA were shared and reviewed with the SON, the MNO, and the HSM prior to the submission to the CNSC.

As part of this IPD, Bruce Power confirmed with IAAC that there are no regional assessments carried out under Section 92 or Section 93 of the IAA or on behalf of an Indigenous governing body that would be applicable to the Project.

5.3 Indigenous-Led Assessments

The SON Coastal Waters Monitoring Program (CWMP) is implemented by SON members through the SON EO. The results are shared annually with Bruce Power and are incorporated into the ERA, as well as other Environmental Monitoring Processes, and is a complementary measure in Bruce Power's *Fisheries Act* Authorization. The continuation of this program will improve baseline understanding of Lake Huron and Georgian Bay, including knowledge of the existing fish community, water temperature, water quality, wetland habitat and SON Ecological Knowledge. More information on the SON CWMP is provided in Section 14.16.

SON Fisheries Programs have also undertaken large-scale Lake Huron research programs, including acoustic telemetry and use, occupancy, and knowledge mapping with SON Fishers. Though this work is not specific to or directly related to Bruce Power or its operations, this body of SON Knowledge will support our engagement on environmental items of interest and concern to SON, such as potential impacts to fish and fish habitat [R-34].

As we work through the IA process, Bruce Power will continue to engage with the Indigenous Nations and Communities outlined in Section 4.0 to determine interest in carrying out Indigenous-Led studies, the inclusion of Indigenous Knowledge throughout the IA, and land-use or other environmental studies that would support addressing concerns and interests related to the proposed Project.

5.4 Regional Studies and Plans

There are numerous studies in the region that are relevant to the Project including, but not limited to, those conducted by Environment and Climate Change Canada, which include the 2021 Lake Huron Canadian Nearshore Assessment [R-35], The Council of the Great Lakes Region (CGLR) research and Regional Assessment of Sustainability in the Binational Great Lakes Megaregion [R-36][R-37], Ontario's Ministry of the Environment, Conservation and Parks (MECP) Great Lakes Strategy [R-38], and International Joint Commission (IJC) Science Advisory Board Work Group on Great Lakes Ecosystem Valuation [R-39]. This collection of studies and plans examine many aspects of the current state of Lake Huron as well as considering future conditions that are relevant to the Project such as sustainable use strategies, shoreline condition, climate change, invasive species, as well as conservation strategies. Bruce Power will continue to review and leverage the information relevant to the Project throughout the IA.

The Nuclear Innovation Institute (NII) recently launched The Climate Project, which is a "living, trusted and accessible digital hub created by the NII—but with scientific research findings from qualified sources in academia, municipal, provincial and federal governments, conservation

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authorities, NGOs, industry partners and sources of local Indigenous knowledge” [R-40]. The purpose of The Climate Project is to “share a body of localized research and scientific knowledge on climate change pertaining to people in this region - those in Bruce, Grey, and Huron counties and local Indigenous communities - all located within the Saugeen Ojibway Nation Territory”.

Bruce County is the land use planning authority and delivers planning services to each of the local municipalities in Bruce County. The County acts as the approval authority for plans of subdivisions and condominiums, severance applications, as well as local Official Plan Amendments.

6.0 STRATEGIC ASSESSMENTS RELEVANT TO THE PROJECT

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. The Strategic Assessment of Climate Change (SACC) developed by ECCC was published in 2019 [R-41] and enables consistent, predictable, efficient and transparent consideration of climate change throughout federal impact assessments. The SAAC will be reviewed and updated every five years.

In preparation of this IPD, IAAC informed Bruce Power that they are not aware of any other relevant strategic assessments that have been conducted under section 95 of the IAA.

PART B: PROJECT INFORMATION

7.0 A STATEMENT OF THE PURPOSE OF AND NEED FOR THE PROJECT

The Project will provide an option to the province of Ontario for nuclear expansion on the Bruce Power site for up to 4,800 MWe of electricity. This will support Ontario’s growing energy needs, while advancing federal and provincial carbon emissions goals. Such need for additional electricity has been forecasted by both Ontario’s IESO and the Government of Canada.

The IESO identified the need for new nuclear in its Pathways to Decarbonization Report [R-4]. The Pathways to Decarbonization Report was issued in December 2022, and forecasts the need for an additional 69,000 MWe of non-emitting supply to meet growing electricity demand and fully decarbonize by 2050, including 17,800 MWe of additional nuclear capacity. The report called for “no regret actions” including “beginning the planning, siting and environmental assessment work needed for new nuclear”. A timeline of projected energy needs into 2050 from the IESO is shown in Figure 6. Figure 7 and Figure 8 provide pathway scenarios from the Pathways to Decarbonization Report.

In July 2023, the Government of Ontario responded to the IESO’s Pathways to Decarbonization Report by releasing Powering Ontario’s Growth [R-42]. The plan outlines Ontario’s electricity policy for the coming decade, a key element of which is “starting the

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development of long-lead generation and storage assets like nuclear and pumped hydroelectric so the government has a range of options to choose from to contribute to our diverse energy system”. Bruce Power completing an IA was cited as an important option for the province, complemented by a provincial request for the IESO to work with Bruce Power on a cost-recovery framework for completing pre-development work. On April 4th, 2024 the Minister of Energy directed the IESO to enter into a funding agreement with Bruce Power to recover costs incurred for undertaking the IA process. An agreement was formally executed between the IESO and Bruce Power in April 2024. Together, these actions signal a clear need for the Project from a provincial electricity system planning perspective.

In the 2024 Annual Planning Outlook (APO) [R-43], the IESO projects quicker demand growth in the near term than its previous APO and the Pathways to Decarbonization Report. This growth is driven by industrial growth, such as investment in electric vehicle manufacturing and related supply chains, electrification of transportation and population growth. A “high-nuclear” case is considered by IESO, which assumes that capacity from Bruce C is available in the 2040s. This scenario shows that new baseload nuclear from Bruce C would contribute significantly to addressing Ontario’s electricity supply needs and demonstrates the necessity for exploring this option [R-43].

The federal government has also identified a need for new electricity infrastructure to meet growing demand. In its 2023 budget, the Government of Canada forecasted that demand for electricity will double between now and 2050, and “to meet this increased demand with a sustainable, secure, and affordable grid, our electricity capacity must increase by 2.2 to 3.4 times compared to current levels [R-44]”. In February 2024, the Government of Canada (Natural Resources Canada) announced up to \$50 million of funding under the Electricity Predevelopment Program, which will support pre-development work to study the feasibility of the option for a new nuclear build on the Bruce Power site [R-45]. The Government of Canada has also announced measures to “help get nuclear projects built in a timely, predictable, and responsible fashion”. This includes a 3-year target for nuclear project reviews and progress on implementing Investment Tax Credits that include new nuclear projects, as announced in Budget 2024 [R-46].

Beyond electricity supply and net zero targets, the Project will create and sustain high-quality jobs in Bruce, Grey and Huron Counties and beyond by supporting a highly technical and robust supply chain, as well as meaningful economic benefits to Indigenous Nations and Communities.

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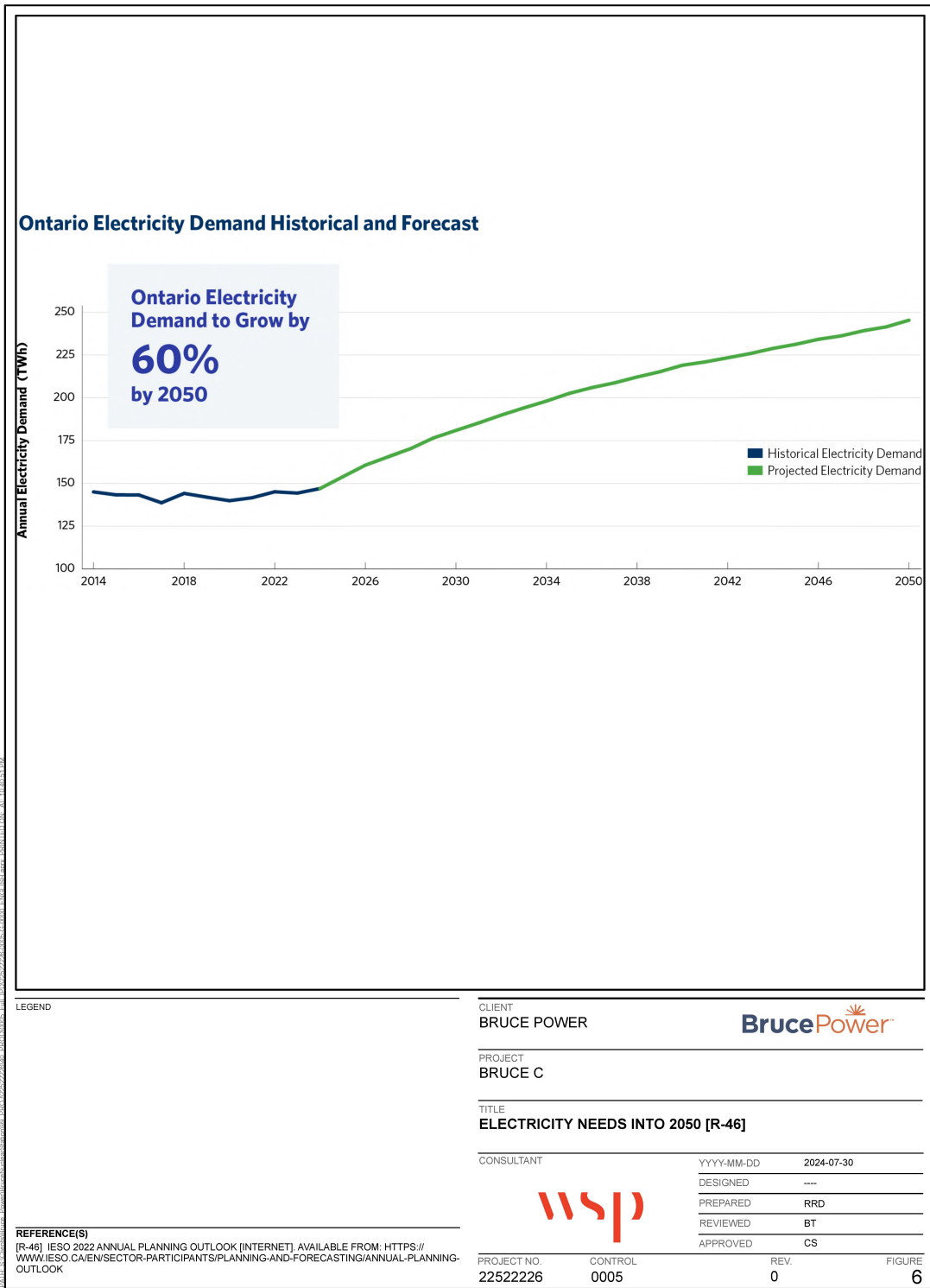


Figure 6: Electricity Needs into 2050 [R-47]

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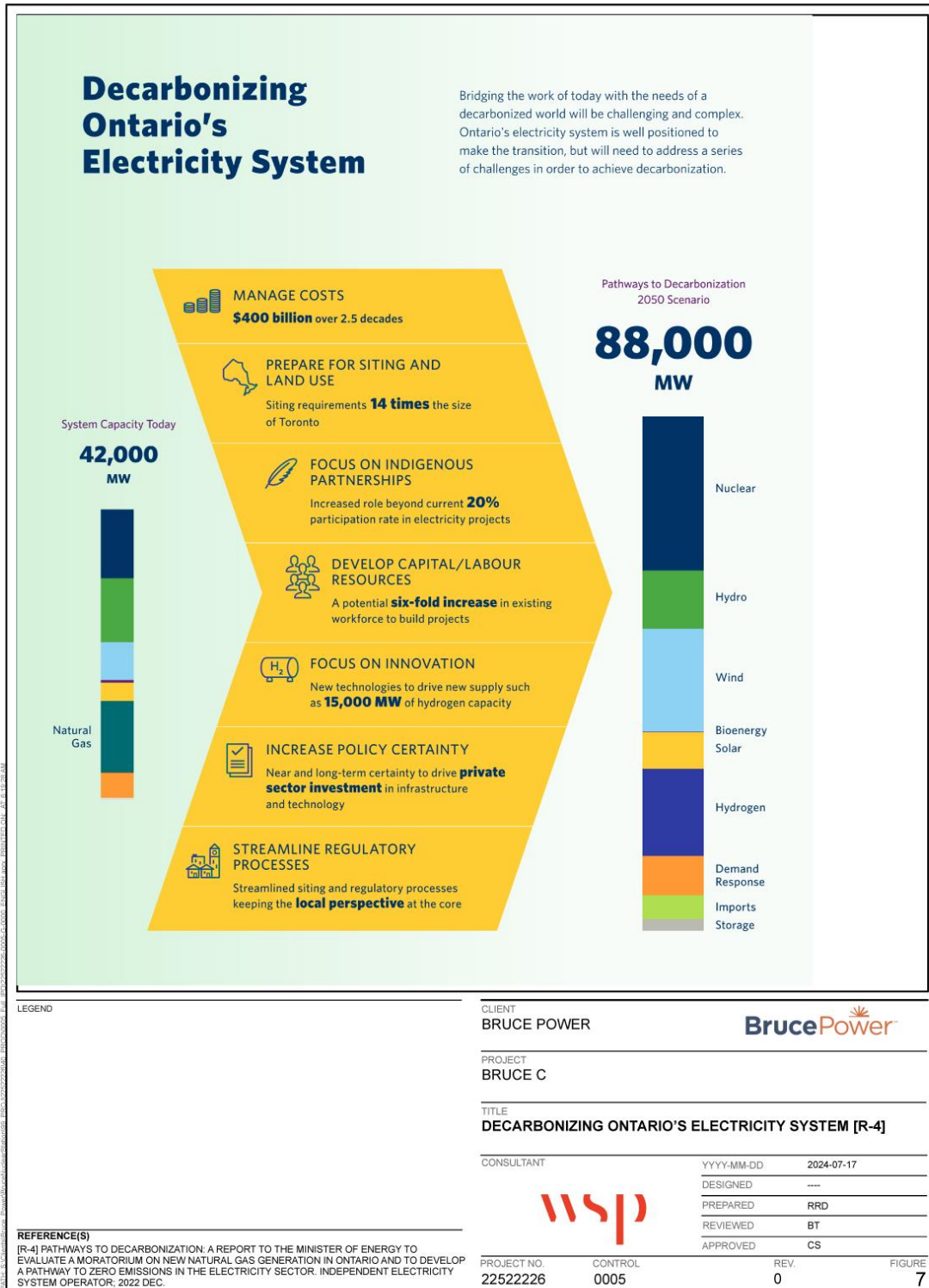


Figure 7: Decarbonizing Ontario's Electricity System [R-4]

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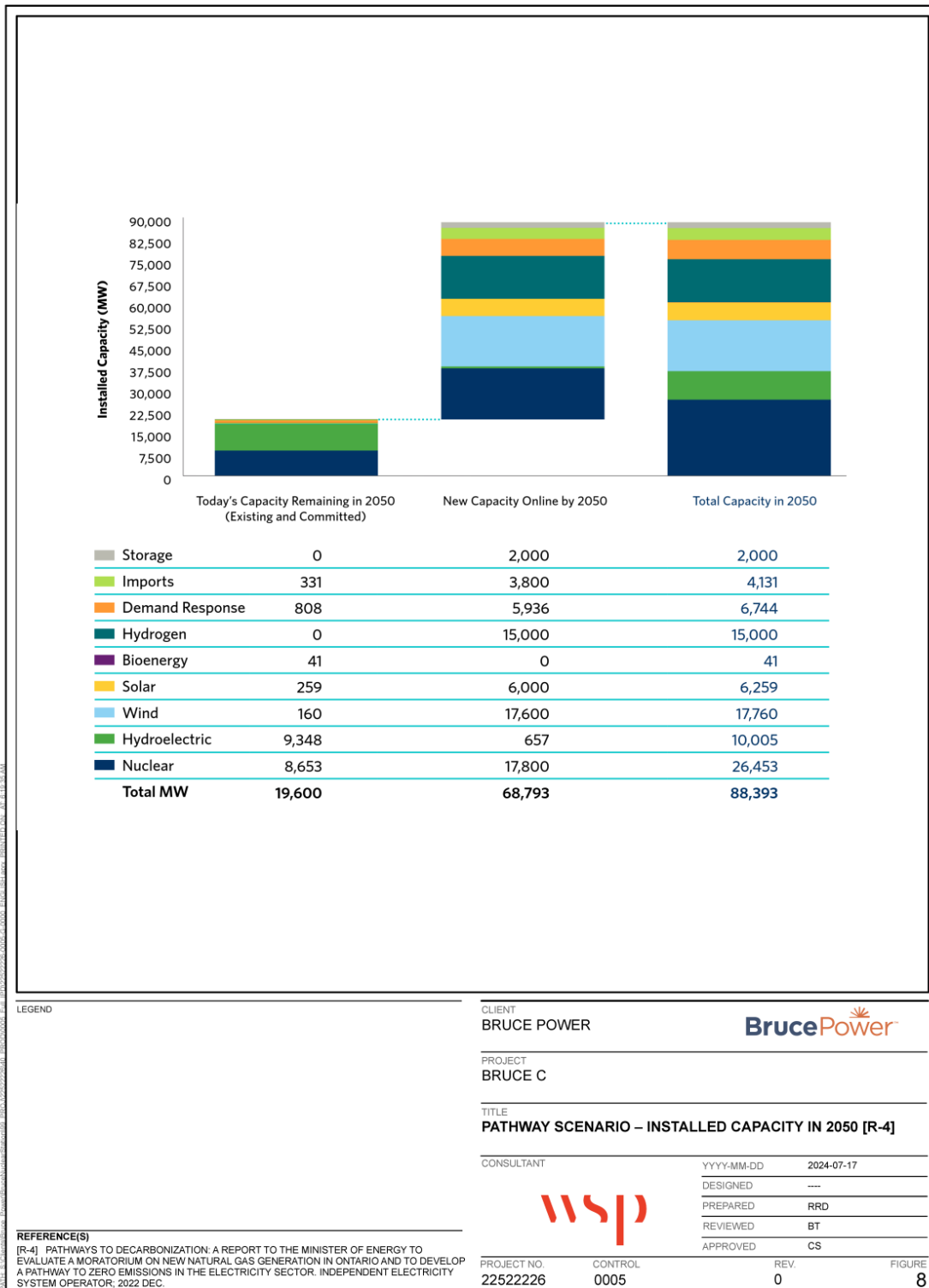


Figure 8: Pathway Scenario – Installed Capacity in 2050 [R-4]

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8.0 THE PROVISIONS IN THE SCHEDULE TO THE PHYSICAL ACTIVITIES REGULATIONS

The Project has a proposed capacity of up to 4,800 MWe or 13,600 megawatts thermal (MWth) and will be located on the Bruce Power site. As such, the Project is a “designated project” as described in subsection 27(a) of the Physical Activities Regulations: [R-48]

“27 The site preparation for, and the construction, operation and decommissioning of, one or more new nuclear fission or fusion reactors if

(a) that activity is located within the licensed boundaries of an existing Class IA nuclear facility and the new reactors have a combined thermal capacity of more than 900 MWth”

9.0 PROJECT ACTIVITIES

Table 2 summarizes all known activities, infrastructure, permanent or temporary structures and physical works to be included in and associated with the site preparation, construction, operation (active and safe storage operations), decommissioning, and abandonment of the Project, as understood at this stage in the Project planning. The Project activities will continue to be refined as the Project progresses.

The Project is located at the existing Bruce Power site and, as such, the Project may leverage existing structures to support the Project. These structures may include existing roads, parking lots, docks, warehouses, laydown areas, office buildings, labs, training facilities, domestic water supply and wastewater treatment plant. The existing access to the Bruce Power site is along Tie Road. Considerations for the potential use of existing structures will be further assessed as part of the Impact Statement.

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Table 2: Site Preparation, Construction, Operation, Decommissioning and Abandonment Activities

Project Phase	List of Activities, Infrastructure, Permanent or Temporary Structures and Physical Works
<p>Site Preparation</p>	<p>Site preparation activities may include:</p> <ul style="list-style-type: none"> • Preparation of temporary construction areas; • Land clearance; • Surface clearing and grubbing, including demolition of existing structures; • Relocation or removal of existing below-grade utilities; • Installation of services and utilities; • Grading; • Construction of flood protection and erosion control measures¹; • Construction of stormwater management facilities; • Preparation of temporary or permanent new roads, road upgrades, and parking lots; • Installation of dock for delivery of components¹; • Materials laydown; • Installation of temporary construction facilities for equipment assembly, administration and personnel amenities; • Blasting to prepare foundations of reactor buildings and water intake and discharge structures¹; • Dewatering for site-preparation activities; • Procurement of components and equipment; • Delivery of components by road and tug-towed barge¹; • Construction of concrete batch and crushing plant; and • Management of soils and waste generated by site preparation activities.
<p>Construction</p>	<p>Construction activities may include:</p> <ul style="list-style-type: none"> • Continuation of construction of stormwater management facilities; • Construction of water intake and discharge structures; • Construction of switchyard; • Dewatering of construction area; • Continuation of blasting to prepare foundations of reactor buildings and water intake and discharge structures; • Use of waste rock as infill for power block area, road base and building foundations; • Management of waste generated by construction activities; • Installation of any additional temporary construction facilities for equipment assembly, administration and personnel amenities; • Continuation of procurement of components and equipment;

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

Table 2: Site Preparation, Construction, Operation, Decommissioning and Abandonment Activities

Project Phase	List of Activities, Infrastructure, Permanent or Temporary Structures and Physical Works
	<ul style="list-style-type: none"> • Materials laydown; • Construction of all plant buildings and structures; • Delivery of components by road and tug-towed barge; • Assembly of modules on-site; • Lifting of modules via heavy lifting cranes; and • Installation of equipment.
<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: <ul style="list-style-type: none"> ○ Structure, System and Components (SSC) construction completion activities; ○ SSC turnover activities; ○ Commissioning- SSC testing and qualification activities; ○ Fuel loading; ○ Stormwater management; ○ 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; ○ Site Support Systems; and ○ Workers, Payroll and Purchasing.

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Table 2: Site Preparation, Construction, Operation, Decommissioning and Abandonment Activities

Project Phase	List of Activities, Infrastructure, Permanent or Temporary Structures and Physical Works
	Safe storage operations activities may include: <ul style="list-style-type: none"> • De-fueling of the reactors; and • Activities required to maintain support systems and infrastructure (e.g., electrical power systems, lighting, etc.).
Decommissioning	Decommissioning activities may include: <ul style="list-style-type: none"> • Support system shutdown; • Stormwater management; <ul style="list-style-type: none"> ○ Safe storage of radioactive waste, including used fuel; ○ Final disposal of used fuel; and ○ Dismantlement and removal of reactors, and support infrastructure/systems.
Abandonment	Restoration of the site.

Note: ¹ indicates site preparation activities where there is a potential for in-water works

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10.0 ESTIMATE OF THE MAXIMUM PRODUCTION CAPACITY, DESCRIPTION OF THE PRODUCTION PROCESSES

The Project will have a maximum production or generation capacity of up to approximately 4,800 MWe. Bruce Power has not decided on a specific reactor design at this time. Accordingly, the project description uses a technology neutral approach through use of a bounding PPE as the Project basis. Development of a bounding PPE approach is based on an available set of reactor designs which allows the IA to progress in parallel with a technology evaluation for a preferred reactor design. Within the context of the Project, this approach will provide bounding information to facilitate an assessment that can accommodate multiple reactor designs, while still enabling the CNSC and IAAC to perform required assessments.

A technology neutral approach involves the consideration of multiple technologies and designs that can result in the implementation of a combination of reactors on the Bruce Power site as long as their technical characteristics fit within the PPE. A PPE is a set of design parameters relevant to the project's pathways of effects on the environment and is used to define an evolving project as part of a bounding approach. The design parameters are defined by all technologies under consideration, therefore acting as a conservative surrogate for the final reactor design and is bounding for all technologies. The bounding parameters of the PPE will inform the pathways of effect on health, social, cultural, and economic conditions, as well as impacts on Indigenous Nations and Communities.

The proposed reactor technologies currently being considered will be bounded by the PPE. 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-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.

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.

- Atkins Réalis – MONARK;
- Électricité de France – European Pressurized Water Reactor (EPR);
- Hitachi-GE Nuclear Energy – Advanced Boiling Water Reactor (ABWR);

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- GE Hitachi Nuclear Energy – BWRX-300; and
- Westinghouse – AP1000 Pressurized Water Reactor

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 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.

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Figure 9: Reactor Designs Considered in the Plant Parameter Envelope

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11.0 ANTICIPATED PROJECT SCHEDULE

Table 3 summarizes the anticipated schedule for the Project. The timeline for the actual sequence of the Project schedule is dependent on several considerations, and therefore is subject to potential changes. Such considerations include:

- The technology ultimately selected (ex. SMR designs may facilitate compressed construction schedule compared to below);
- Funding certainty; and
- The expected demand ramp-up and new nuclear generation needs.

Environmental monitoring, in accordance with the Environmental Follow-up Monitoring Program that will be prepared for the Project, will occur during each of the Project phases.

Table 3: Anticipated Project Schedule

Project Phase	Anticipated Schedule (Start – Finish)	Notes
Impact Assessment	Approximately 3 - 4 years (2024 – 2027/2028)	In the 2024 Federal Budget, the government set a three-year target for nuclear project reviews by working with the CNSC and the IAAC to consider how the process can be better streamlined and duplications reduced between the two agencies [R-46]. However, based on necessary engagement activities with Indigenous Nations and Communities, local municipalities and the public, Bruce Power believes that the IA process may take up to 4 years. Bruce Power will continue to engage with SON, HSM, and MNO throughout the IA process. Bruce Power is committed to working together to address SON's concerns related to the IA timelines and to taking the time reasonably required to support SON's engagement on the IA.

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Project Phase	Anticipated Schedule (Start – Finish)	Notes
		For ease of reference, a 4-year IA process has been assumed for calculating the timelines under the Anticipated Schedule column. The integrated IA will also consider an application for a CNSC Licence to Prepare Site.
Site Preparation	Approximately 3 years (2028 – 2031)	Requires integrated approval for IA and Licence to Prepare Site.
Construction & Commissioning	Approximately 14 years (2031 –2045)	Requires CNSC Licence to Construct. Assumes one year between subsequent unit deployments.
Active Operation	Approximately 60 – 100 years	Requires CNSC Licence to Operate. Assumes 60 – 100 year operational lifespan dependent on the technology selected.
Safe Storage Operation	Approximately 30 years	Application under CNSC Licence to Operate.
Decommissioning	Approximately 10 years	Requires a Licence to Decommission. Requires Detailed Decommissioning Plan.
Abandonment	Thereafter	Requires a Licence to Abandon.

12.0 A LIST OF POTENTIAL ALTERNATIVE MEANS AND POTENTIAL ALTERNATIVES TO THE PROJECT

12.1 Alternative Means

Bruce Power is considering alternative means of achieving the Project's objective of producing up to 4,800 MWe of new nuclear generating capacity at the Bruce Power site by assessing the following alternative means and will be engaging with Indigenous Nations and Communities and the public on the selection of the preferred means for each item.

- Development of the bounding PPE strategy, considering multiple potentially available reactor technologies, as described in Section 10.0.
 - This approach outlines typical bounding conditions to encompass the range of potential reactor designs by comparing parameters and design characteristics to allow assessment of potential Project effects encompassing the range of potentially available reactor technologies.

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- Through the consideration of alternative means, the use of the PPE as bounding will be explained but no reactor designs will be removed from further consideration in the IA.
- Alternative locations on the Bruce Power site, as discussed in Section 1.0, and Section 13(b).
 - Based on the outcomes of the assessment of alternative means, locations found to be technically and economically suitable for siting of infrastructure will be carried through the IA.
- Alternative condenser cooling strategies.
 - Based on the preliminary New Nuclear Condenser Cooling Options Analysis [R-51], Bruce Power plans to assess three cooling options: 1) Once-Through Cooling, 2) a Cooling Tower for recirculating cooling, and 3) Air Cooling.
 - Information collected through the BATEA will inform the assessment of condenser cooling strategies. Condenser cooling strategies found to be technically and economically feasible will be carried through the IA.
 - For consideration of once-through cooling, assessment of alternative strategies will include feasible mitigation measures for fish impingement and entrainment as well as feasible mitigation measures for thermal effluent.
- Switchyard designs in consultation with Hydro One.
 - Switchyard design options identified by Hydro One (for example, air-insulated or gas-insulated) found to be technically and economically feasible will be carried through the IA.
- 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.
 - 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.

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION**12.2 Alternatives To The Project**

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 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.

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PART C: LOCATION INFORMATION

13.0 A DESCRIPTION OF THE PROJECT’S PROPOSED LOCATION

Table 4 provides a description of the Project’s proposed location.

Table 4: Location Information

Section Reference Numbers per Information and Management of Time Limits Regulations Schedule 1	Description
Section 13 (a) Proposed geographic coordinates	The lands to be assessed for the Project are shown in Figure 3. Site maps are provided in Figure 10, Figure 11, and Figure 12. The centre of the Bruce Power site is located at approximately 44°19'37.4"N 81°35'20.9"W.
Section 13 (b) Site Map	Figure 10, Figure 11, and Figure 12 provide site maps of the proposed site layout scenarios. In each scenario the potential fenced facility is identified, as well as the area being assessed for supporting infrastructure. The general area to be further assessed for new intake and discharge structures is also shown in each of the site layout scenarios. Bruce Power is currently completing engineering and feasibility studies to determine locations of Project components, which will inform the Impact Statement. Bruce Power will also be engaging with the Indigenous Nations and Communities on the proposed Project component locations. The fenced facility will include the following infrastructure: <ul style="list-style-type: none"> • Power block; • Switchyard; • Forebay; • Unit and essential services pump house; • Radiological waste storage building; • Dry used fuel storage facility; • Water treatment plant; • Parking; • Security building and guard house; • Diesel storage tanks; • Demineralized water storage; and

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Section Reference Numbers per Information and Management of Time Limits Regulations Schedule 1	Description
	<ul style="list-style-type: none"> • Administration building. <p>The areas identified for supporting infrastructure may include the following:</p> <ul style="list-style-type: none"> • Temporary sewage treatment plant; • Construction laydown; • Temporary steam plant; • Temporary water supply; • Spool yard laydown; • Shops and assembly areas; • Administration buildings; • Storage and shops; • Parking; • Concrete batch and crushing plant; • Temporary rock and sand stockpile area; • Stormwater management; • Utilities; • Roads; • Dock; • Instrumentation, testing and training facilities; and • Simulator facility.
<p>Section 13 (c)</p> <p>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</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>The legal description of the land to be used for the Project is included in Appendix A.</p>
<p>Section 13 (d)</p> <p>The project's proximity to any permanent, seasonal or temporary residences and to the nearest affected communities</p>	<p>The Municipality of Kincardine contains two urban centres and several small communities within 25 km of the Bruce Power site. The urban areas are the Town of Kincardine and Village of Tiverton. Other communities in the Municipality of Kincardine include Inverhuron, Glammis, Bervie, Underwood, Millarton, Armow, and Scott Point. Immediately north of the Municipality of Kincardine is the Town of</p>

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Section Reference Numbers per Information and Management of Time Limits Regulations Schedule 1	Description
	<p>Saugeen Shores. The Town of Saugeen Shores contains the communities of Southampton and Port Elgin. These two population centres are located within 30 km of the Bruce Power site [R-7].</p> <p>Recreational land use includes Inverhuron Park which abuts the southern fence of the Bruce Power site and Baie du Doré/Scott Point area which abuts the northern fence of the Bruce Power site.</p> <p>The fenced perimeter of the existing Bruce Power site is approximately 240 metres (m) south, 750 m north and 1,065 m east to the closest seasonal or temporary residents.</p>
<p>Section 13 (e)</p> <p>The project's proximity to land used for traditional purposes by Indigenous peoples of Canada, land in a reserve as defined in subsection 2(1) of the Indian Act, First Nation land as defined in subsection 2(1) of the First Nations Land Management Act, land that is subject to a comprehensive land claim agreement or a self-government agreement and any other land set aside for the use and benefit of Indigenous peoples of Canada</p>	<p>The SON includes the Chippewas of Saugeen First Nation and the Chippewas of Nawash Unceded First Nation (Neyaashiinigmiing). The Saugeen First Nation is centered at Saugeen First Nation Reserve No. 29 adjacent to the community of Southampton, but also includes Chiefs Point Reserve No.28 located adjacent to Sauble Falls, approximately 35 km and 60 km respectively from the Bruce Power site. The Chippewas of Nawash Unceded First Nation is centered at Neyaashiinigmiing, which is located approximately 85 km from the Bruce Power site on the east shore of Georgian Bay north of the town of Wiarton (Figure 4).</p> <p>The SON Territory includes all of Bruce and Grey Counties and extends into Huron, Perth, Wellington and Dufferin Counties to include the Maitland and Nottawasaga River watersheds [R-15]. It also includes portions of Lake Huron, extending to the US border in the Main Basin, and extending to the approximate mid-point of Georgian Bay. SON have asserted Aboriginal title to the lakebed of Lake Huron and Georgian Bay, a claim which was dismissed by the Ontario Superior Court of Justice. The Court of Appeal allowed the SON's appeal but only to the extent of remitting the matter back to the trial judge to determine whether Aboriginal title can be established to a more limited and defined area. The SON are party to numerous treaties including Treaty 45 ½ which includes the Project lands.</p> <p>The HSM is a self-governing Métis community in Southampton, which is approximately 30 km north of the Bruce Power site. The community has been settled along the Lake Huron shoreline since circa 1818 and their asserted traditional harvesting locations includes the area surrounding the Bruce Power Site (Figure 5).</p> <p>The MNO was established in 1993 as a representative organization of the Métis in Ontario. MNO has 29 community councils across Ontario. Four of these councils (Moon River Métis Council, Georgian Bay Métis Council, Barrie South Simcoe Community Council and the Great Lakes Métis Council)</p>

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Section Reference Numbers per Information and Management of Time Limits Regulations Schedule 1	Description
	<p>comprise MNO – Region 7. These councils are distinct from the HSM which is no longer part of the MNO. The Métis are integrated into the population of the local surrounding municipalities.</p> <p>Bruce Power recognizes that local lakes and rivers, including Lake Huron, are important to and used for traditional purposes.</p>
<p>Section 13 (f)</p> <p>The project’s proximity to any federal lands.</p>	<p>The following provides approximate distances from the Bruce Power site to federal lands:</p> <ul style="list-style-type: none"> • Point Clark Lighthouse National Historic Site is approximately 44 km; • Owen Sound Harbour is approximately 80 km; • Meaford Range and Training Area is approximately 110 km; • Bruce Peninsula National Park is approximately 122 km; and • Fathom Five National Marine Park is approximately 143 km.

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Figure 10: Proposed Site Layout Scenario 1

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Figure 11: Proposed Site Layout Scenario 2

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Figure 12: Proposed Site Layout Scenario 3

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14.0 A BRIEF DESCRIPTION OF THE PHYSICAL AND BIOLOGICAL ENVIRONMENT OF THE PROJECT'S LOCATION BASED ON INFORMATION THAT IS AVAILABLE TO THE PUBLIC

The natural and physical environment of the Bruce Power site has been the subject of numerous environmental assessments, as discussed in Section 5.0. The Bruce Power site is home to a diverse natural environment that contains hundreds of species of plants and wildlife. The protection of these species and the habitats that support them is a priority for Bruce Power's environmental protection program. The Bruce Power site and its surroundings have features of natural, physical, and cultural significance. These include the Lake Huron shoreline, commercial, recreational, and subsistence fisheries, and the Baie du Doré Provincially Significant Wetland (PSW). Two provincial parks (Inverhuron and MacGregor Point) and three conservation areas (Brucedale, Saugeen Bluffs, and Stoney Island) are in close proximity to the Bruce Power site. The area is used for important land and water-based activities that support cultural, spiritual and economic practices and activities.

The Bruce Power site is situated at the northern end of the Douglas Point Promontory, a feature of comparatively low relief rising approximately 13 to 15 m above the mean surface elevation of Lake Huron to elevations of approximately 185 to 190 m above sea level. This promontory juts 2.5 to 3.0 km into the lake over a length of 5 km extending from Baie du Doré southward to Inverhuron Bay. Due to shoreline erosion, bedrock outcrops exist along the Lake Huron shoreline between Inverhuron Bay and Baie du Doré. Inland, the dominant physiographic feature is the Algonquin Bluff, a ridge approximately 30 m high formed from shoreline erosion by postglacial Lake Algonquin. The terrain above and inland from the Algonquin Bluff consists of comparatively flat clay plains with a network of streams that drain westward to Lake Huron. Below the Algonquin Bluff is marked by the less prominent Nipissing Bluff, a remnant of the glacial Lake Nipissing shoreline. Areas of wetland including cedar swamp also occur below the Algonquin Bluff and in other forested areas.

14.1 Meteorology

Climate represents the long-term expected values for parameters such as temperature, precipitation, and winds. The climate of an area can be described by the long-term average (e.g., 30 years) and the historic average climate has been calculated for the region for the period of 1971 to 2000 [R-53]. The historic annual average daily temperature, total precipitation, and average wind speed and direction at Wiarton Airport were 6.1 degree Celsius (°C), 1,041.3 millimetre (mm), and 13.5 km/hour predominantly from the south, respectively.

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. The on-site tower measures wind speed and direction at the 10 m and 50 m elevation. The off-site tower measures wind speed and direction at the 10 m elevation. The 2022 ERA utilized five-year dataset from 2011-2016 (excluding 2014) to represent the wind conditions for the Bruce

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Power site [R-7]. 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 10 m 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].

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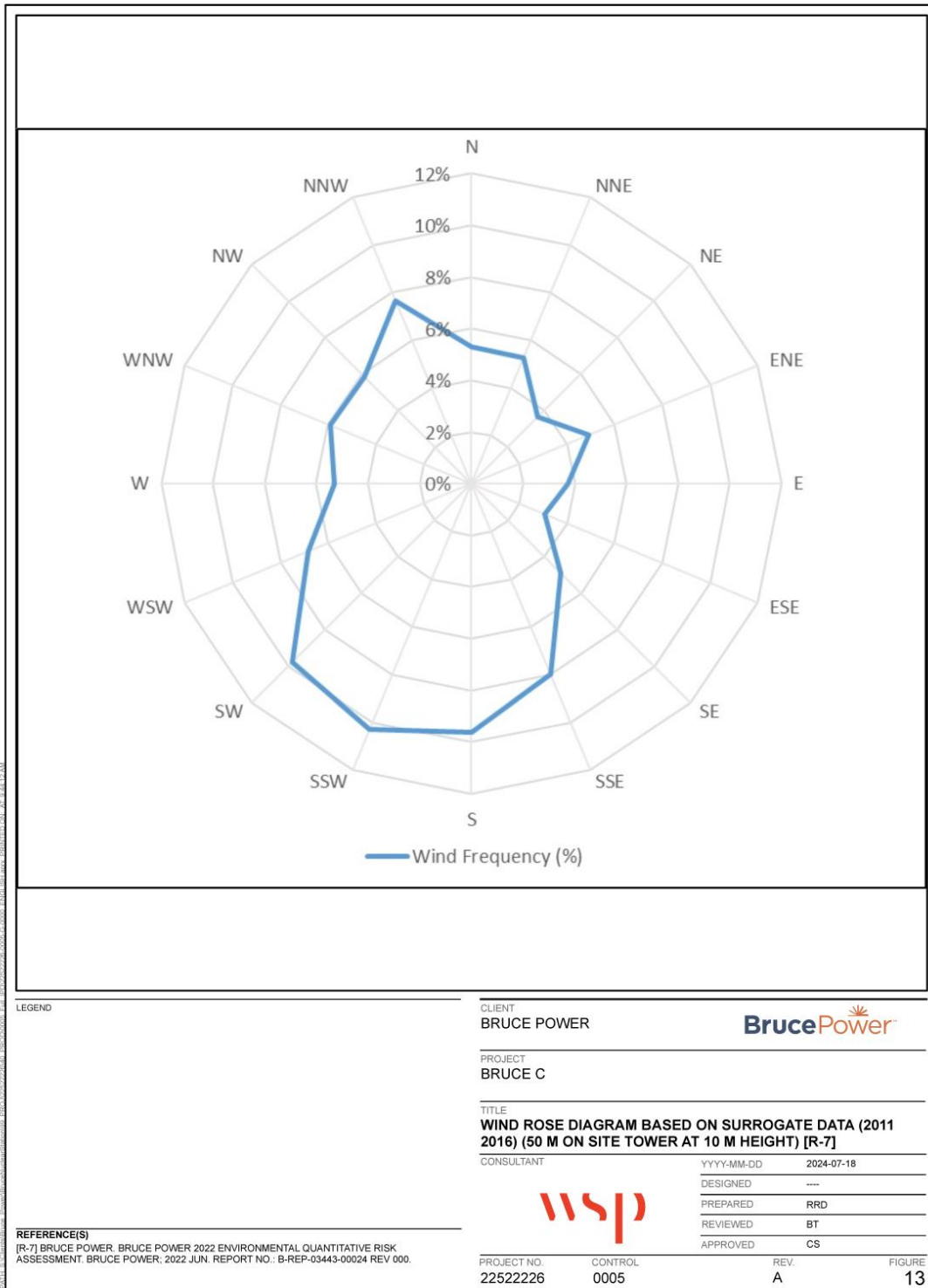


Figure 13: Wind Rose Diagram Based on Surrogate Data (2011-2016) (50 m On-site Tower at 10 m Height) [R-7]

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Table 5: Atmospheric Temperature Data from Onsite Meteorological Tower (2007–2016) [R-7]

Month	Hourly Temperature Max. (°C)	Hourly Temperature Min. (°C)	Monthly Temperature Mean (°C)
January	17.3	-20.3	-4.0
February	10.9	-26.7	-5.0
March	25.1	-18.6	0.7
April	28.4	-7.7	5.9
May	31.1	-0.3	12.5
June	31.0	3.1	16.6
July	34.1	8.3	20.4
August	31.2	8.9	20.2
September	31.9	3.2	17.0
October	27.1	-1.7	10.4
November	20.8	-11.0	5.6
December	16.1	-14.3	-0.9
Year	34.1	-26.7	8.3

Since there is a gap in temperature data for 2017-2020, consideration has been given to utilizing air temperature data collected by Environment Canada at weather stations within the vicinity of the Bruce Power site [R-7]. It should be noted that the Kincardine and Wiarton stations may not closely represent the near-shore temperature conditions of the Bruce Power site. Compared to the 2007-2016 on-site data presented in the 2022 ERA [R-7], the total daily temperature maximum, minimum and total monthly temperature mean recorded for Kincardine and Wiarton are not significantly different. Differences between the on-site meteorological tower and Environmental Canada stations range from $\pm 0.1^{\circ}\text{C}$ (total daily temperature maximum) to $\pm 4.2^{\circ}\text{C}$ (total daily temperature minimum) [R-7]. In 2020, both the on-site and off-site meteorological towers were upgraded to improve data availability. At both locations the monitoring equipment were replaced and have battery back-up capabilities, and the dataloggers and software were upgraded. The data availability analysis results for the two meteorological towers have since improved (>90% complete) [R-7].

14.2 Regional Overburden and Bedrock Geology

The overburden at the Bruce Power site consists of Elma Till, which has a sandy silt to silt matrix, with clayey silt at the southern area. Other areas of the Bruce Power site (to the east) have exposed bedrock at select locations. A thin seam of glaciolacustrine deposits (sand and

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gravel mixtures) is present along the shoreline, north from Kincardine to Inverhuron Provincial Park. Sections of these deposits are referred to as the Huron fringe, which extends from Sarnia to Tobermory. The site overburden surrounding the Bruce Power site (to the east) is characterized as St. Joseph Till (silt to silty clay), with pockets of glaciolacustrine deposits (silt and clay). The topography at the Bruce Power site is generally smooth. The ground elevation rises approximately 20 m from the Lake Huron shoreline to the eastern property boundary. The former lake shoreline is present now as a bluff on the other side of the eastern property boundary. The ground surface within the Bruce Power site is generally flat, due to construction grading activities within the site. The overburden increases in thickness from less than 3 m near the shoreline to approximately 27 m in depth at the eastern property boundary. Several stratigraphic units are present within the subsurface; they vary in thickness and are laterally discontinuous [R-54].

The bedrock at the Bruce Power site is composed of Paleozoic limestone, dolostone, and shale of the Detroit River Group, or Onondaga Formation. The bedrock is exposed at ground surface at certain locations or is covered by a thin layer of overburden at others. The Onondaga Formation extends in a southeastern direction and is underlain by the Bois Blanc and Oriskany Formations (sandstone, dolostone, and limestone). The bedrock rises from beneath Lake Huron to an elevation over 184 m above sea level, approximately 500 to 800 m from the shore. This area is a local high point of bedrock elevation [R-54].

14.3 Site Overburden Geology

The overburden geology of the Bruce Power site comprises variable thicknesses of sand and gravel (0 to 10 m) overlying a silt till sequence which has been divided into a “weathered till unit” and an underlying “un-weathered till unit”. Near the Lake Huron shoreline, there is less than 3 m of overburden in the vicinity of the Bruce B generating station, former Bruce Heavy Water Plant (BHWP), and parts of the Bruce A generating station prior to their construction [R-55]. These areas were graded with engineered fill to enable construction.

The generalized overburden stratigraphic sequence may be presented as follows:

- Surficial Sand and Gravel Unit;
- Upper Weathered Silt Till Unit;
- Upper Unweathered Silt Till Unit;
- Middle Sand / Layered Till Unit (in the vicinity of the OPG operated Western Waste Management Facility (WWMF)); and
- Lower Unweathered Silt Till Unit.

Along the Lake Huron nearshore, wave scouring has removed much of the overburden and left a residual lag of boulders [R-55].

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14.4 Site Bedrock Geology

The bedrock underlying the surficial deposits at the Bruce Power site consists of Middle Devonian age, buff dolostone interbedded with dark grey bituminous limestone of the Amherstburg Formation [R-55]. The bedrock surface under the Bruce Power site dips northeastward at approximately one percent, which likely reflects the influence of glacial erosion of the bedrock surface. By comparison, the bedding structure of the bedrock sequence (Amherstburg – Bois Blanc Formation contact) beneath the Bruce Power site dips gently westward to southwestward at approximately one percent, based on structural contours [R-55].

14.5 Hydrogeology

In general, overburden groundwater flow is toward Lake Huron, with the exception of radial inward flows at the Bruce A and Bruce B generating stations induced by foundation drains [R-55]. There appears to be a groundwater divide in the water table within the overburden, between the former (Bruce Heavy Water Plant) BHWP and the WWMF. Northwest of this divide, shallow groundwater flows towards Lake Huron; southeast of the divide, shallow groundwater flows towards the WWMF area. The divide appears to be related to the presence of the Middle Sand Aquifer underlying the vicinity of the WWMF. There also appears to be a groundwater divide within the WWMF area, with a component of groundwater flow to the north and a component of groundwater flow to the south. The Middle Sand Aquifer in some areas is directly connected to the underlying shallow bedrock and appears to act as a conduit for vertical migration of infiltrating groundwater in the vicinity of the WWMF.

The shallow bedrock groundwater flow appeared to be similar to that observed for the overburden, wherein there appears to be a groundwater divide between the former BHWP and the WWMF. Northwest of this divide, shallow groundwater flows towards Lake Huron; southeast of the divide, shallow groundwater flows towards the WWMF area.

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. Ambient water temperatures in the nearshore thermal regime are affected by upwelling and downwelling events in summer. During these events, daily changes of about 10°C in ambient water temperature are common, with recorded extreme increases or decreases of more than 15°C over a few days. The area surrounding the Bruce Power site includes the watersheds for the numerous smaller tributary streams that flow into Lake Huron along the length of the shoreline between Kincardine and Southampton. MacPherson Point is the northernmost portion of the headland that includes Douglas Point and Gunn Point to the south. The shoreline from MacPherson Point to Gunn Point is dominated by a flat to gently sloped rocky platform that extends offshore to a distance of approximately 300 m. The lake bottom drops off relatively steeply immediately in front of the Bruce Power site, reaching a depth of about 18 m at 1 km from shore. Within 1 km of the shore, lake currents tend to be broken up into smaller littoral cells by bathymetric controls. There is evidence of littoral drift

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occurring around MacPherson Point and Douglas Point. Investigations of sediment quality of the Bruce Power site have indicated low concentration of metals [R-7].

14.7 Wildlife and Plant Communities

A thorough review of wildlife and plant communities and the resulting ecological risk assessment is included in the 2022 ERA [R-6]. Monitoring is ongoing and results of annual surveys are reported in the Environmental Protection Report which is posted to the Bruce Power external website on May 1st each year [R-30][R-56]. Species at Risk (SAR) that have the potential to occur on the Bruce Power site are listed in the appendices of the Bruce Power 2022 Environmental Quantitative Risk Assessment [R-53]. The following subsections summarize the findings from those assessments. We anticipate conducting further wildlife and plant studies in the IA and will discuss the scope of those studies during that stage.

14.7.1 Plant Communities

Vegetation communities at the Bruce Power site are consistent and include a mixture of community types. An update to the Ecological Land Classification (ELC) was completed in 2016 [R-57], which was an update to the vegetation assessment completed as part of the Bruce New Build Environmental Assessment in 2008 [R-58], and biodiversity studies in 2001 [R-59]. A total of 72 separate ELC communities were identified within the study area [R-57]. In 2007, a total of 195 plant communities were identified within the Bruce Power site. These represent a total of 15 broad categories of plant communities including agriculture, alvar, beach, cultural barren, cultural grassland, cultural meadow, cultural thicket, cultural woodland, forest, industrial barren, industrial lands (active use), marsh, open water, submergent aquatics and swamp. The plant community categories are consistent with the ELC classification results from 2016-2017. This demonstrates the consistency of this classification which remains to date.

Cultural ELC communities, defined as areas with a long-standing history of anthropogenic use and modification, occupy the largest proportion of the Bruce Power site, and industrial lands occupy the largest area of that category. Generally, with the exception of the small patch of shrub dominated alvar, the plant communities present within the Bruce Power site are not outstanding examples of their community types in this part of the province [R-53].

14.7.2 Plant Species

A total of 437 vascular plant species have been recorded within and surrounding the Bruce Power site to date. One hundred species or 24% of the total flora are identified as introduced or non-native to Ontario. Many of these species are found within communities that have experienced some form of disturbance [R-57].

One SAR, Butternut (*Juglans cinerea*), is observed on site on OPG retained lands. This species is listed as Endangered under the Ontario Species at Risk Act, 2007 (ESA) and the Federal Species at Risk Act, 2002 (SARA). A total of 97 locally significant plant species were identified during the 2016 to 2017 field investigation [R-57]. Forty of these species are considered introduced to Ontario; however, they have been identified as rare or uncommon.

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Many of the rare and uncommon species are found within the wetland swamp and fen communities [R-53].

14.7.3 Culturally Significant Plant Species and Wildlife Species and Habitats

Traditional land use and occupancy of lands and waters is an important part of the way of life, culture, history, and economy for Indigenous Nations and Communities. This includes the use of lands and waters for harvesting fish, wildlife and terrestrial plant species for foods, medicine, arts, crafts and other cultural and spiritual purposes. Over the course of the last decade, community-specific plant use information has been shared with Bruce Power by both SON and HSM. In 2019-2021, additional diet surveys were conducted with SON and HSM.

SON have identified the importance of fish, fish habitat and the fishery in SON Territory, preserving black bear and reptile habitat and movement corridors, upland deciduous forests, riparian areas, wetlands, alvars and cliffs, coniferous and mixed forests and meadows, along with sites that support plants used for medicine, food or products of traditional, cultural or economic importance to SON [R-60].

The HSM have indicated that they historically harvested vegetation and medicinal plants from the area near the Bruce Power site.

14.8 Wildlife Habitat and Communities

Assessment of wildlife habitat and communities at the Bruce Power site is ongoing. The 2016 survey formally updated the assessment that was a component of the Bruce New Build EA in 2008 [R-58]. Additional wildlife monitoring and SAR assessments were completed between 2016 to 2022 [R-7][R-53].

Most of the wildlife habitat on the Bruce Power site occurs around the periphery of the Bruce Power site, in Inverhuron Provincial Park, in the Baie du Doré Wetland Complex and in the conifer forest communities near or along the perimeter fence. As well, these areas provide access to a variety of different habitat types, such as the lake shore, dug ponds and the local watercourses, providing a range of foraging opportunities for locally resident wildlife, while acting as “core” natural habitat within which disturbance is absent or infrequent [R-57].

14.9 Mammals

Camera traps were first set at the Bruce Power site in the late summer and fall of 2016. In 2016, the species recorded were largely mammals, comprising 164 observations (39% of observations in 2016). Bird observations comprised 145 records (35% of observations in 2016). Reptiles, a mixture of unknown turtles and Painted Turtles were captured in 91 images (22% of observations in 2016). Unknown frog species were documented 13 times (3% of observations in 2016) [R-61].

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In 2017, the camera traps were moved to new locations and were set in spring and summer. During this second year, there were 111 mammal observations (46% of observations in 2017), 123 bird observations (51% of observations in 2017), and 5 frog observations (2% of observations in 2017) [R-61].

A total of 26 species of mammals have been reported on and around the Bruce Power site based on evidence of presence (e.g., tracks, scat) or actual sightings. These species include both small and large mammals, such as the masked shrew (*Sorex cinereus*) and white-tailed deer (*Odocoiles virginianus*). White-tailed deer are the most common mammal species observed on and around the Bruce Power site [R-58]. In recent years, monitoring efforts have been expanded to include bat surveying. Eight bat species were identified during acoustic monitoring surveys completed in 2016 [R-57]. The most abundant species was the little brown myotis (*Myotis lucifugus*) [R-53].

14.10 Birds

Point count surveys for breeding birds were conducted on May 30 to June 1, June 21 to 24, and July 7, 2016 [R-57]. Point counts were established across the Bruce Power site on the first visit in late May/early June in representative ELC communities. A total of 82 species were observed at the breeding bird point counts and an additional 12 species were observed incidentally during the breeding season. The most commonly encountered species (based on point counts which were visited twice, excluding flyovers and birds beyond 100 m from the point) was Red-eyed Vireo (*Vireo olivaceus*) followed by American Robin (*Turdus migratorius*).

A number of birds with special conservation status have been observed on the Bruce Power site, including several of which are reported to nest within the Bruce Power site or its surrounding area, and others that may be local foragers [R-57][R-62]. As noted above, the list of SAR species is provided in the appendices of the Bruce Power 2022 Environmental Quantitative Risk Assessment [R-53].

14.11 Bald Eagle and Winter Raptor Surveys

Since 2017, Bruce Power has monitored habitat use by Bald Eagles (*Haliaeetus leucocephalus*) and other raptors in the vicinity of the Bruce Power site during the overwintering period (November - March). Overall, across the whole site, counts have increased in the last four years indicating an increase in the abundance of the local overwintering Bald Eagle population.

Although other raptor species are frequently observed in the spring, summer and fall, few raptors are found on or near Bruce Power in the winter months. None were observed during winter raptor surveys conducted in 2017- 2018 and 2020 - 2021. One Red-tailed Hawk (*Buteo jamaicensis*) was observed in 2018 - 2019, and one Snowy Owl (*Bubo scandiacus*) and one Northern Harrier (*Circus hudsonius*) were recorded in 2019 - 2020. In 2021, a Cooper's Hawk (*Accipiter cooperii*), Northern Harrier and Snowy Owl were observed on the Bruce Power site. Winter raptor habitat availability in the local area is poor because a considerable snowpack often accumulates. Raptors can more easily find food in open agricultural fields farther inland where windswept areas expose rodents and other prey.

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14.12 Waterfowl and Shoreline Bird Surveys

The total number of birds observed during the 2022 monitoring was 3,584. A total of 32 species of birds were identified during the waterfowl/shorebird monitoring. The Canada Goose (*Branta Canadensis*) was the most abundant bird observed in 2022 with a total of 765 individual observations. In 2021, six spring/fall surveys were completed between March and December, recording a total of 3,138 birds across 35 species of waterfowl/shorebirds. Overall, surveys in 2021 and 2022 have demonstrated that there are diverse populations of local and migrant waterfowl and shorebirds inhabiting the lands nearby Bruce Power, with the highest density in Baie du Doré.

14.13 Breeding Bird Surveys

Breeding bird monitoring surveys were completed by Bruce Power and OPG biologists at 10 locations in the morning of June 2, 2022, and June 9, 2022. A total of 60 bird species were documented during the 5-minute surveys at each location. The most commonly observed species were the Red-Eyed Vireo (*Vireo olivaceus*) and American Crow (*Corvus brachyrhynchos*), with Blue Jay (*Cyanocitta cristata*), Red-winged Blackbird (*Agelaius phoeniceus*), American Goldfinch (*Spinus tristis*), Common Yellowthroat (*Geothlypis trichas*), American Robin (*Turdus migratorius*) and Song Sparrow (*Melospiza melodia*) close behind. Interesting observations included four SAR bird species: Eastern Wood Pewee (*Contopus virens*), Wood Thrush (*Hylocichla mustelina*), Eastern Meadowlark (*Sturnella magna*), and Canada Warbler (*Cardellina canadensis*). The threatened Bobolink (*Dolichonyx oryzivorus*) was observed in 2021 but not in 2022. Two Sedge Wrens (*Cistothorus stellaris*) were observed in 2020 and this bird is not locally common.

14.14 Reptiles

Snake monitoring has been ongoing on the Bruce Power site since 2017 and has focused on locating and characterizing the species assemblage and identifying potential critical habitat within the facility lands. Incidental reptile observations are recorded year-round during vehicle-wildlife interaction surveys, pedestrian surveys and with employee sightings.

Focused snake board studies were initiated in 2020 in collaboration with OPG following guidelines for snake monitoring outlined in the Ontario Ministry of Natural Resources and Forestry (MNRF) survey protocol [R-63]. Bruce Power placed 11 snake boards in key habitat locations on-site and surveyed them on 13 occasions between May 17, 2022, and September 30, 2022. OPG placed an additional 33 snake boards around the site and observed them on 5 occasions between May 6, 2022 and September 30, 2022.

Seven different snake species were observed in 2022 between the Bruce Power and OPG monitoring programs: Eastern Garter Snake (*Thamnophis sirtalis*), Dekay's Brown Snake (*Storeria dekayi*), Red-bellied Snake (*Storeria octipommarulata*), Smooth Green Snake (*Ophedys vernalis*), Northern Ring-necked Snake (*Diadophis punctatus edwardsii*), Northern Watersnake (*Nerodia sipedon sipedon*) and Eastern Milksnake (*Lampropeltis Triangulum*). Although the Eastern Ribbonsnake (*Thamnophis sauritus*) was not observed in 2022 it has been seen in past years. The Eastern Ribbonsnake is a listed SAR in Ontario and Canada

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with a conservation status of *Special Concern* [R-64]. Snake species recorded on-site from year to year were generally consistent, with the Smooth Green Snake being first observed in 2020.

Incidental observations were made of Snapping Turtle (*Chelydra serpentina*), Midland Painted Turtle (*Chrysemys picta marginata*), and an additional turtle species from 2017 to 2022. The Coastal Waters Monitoring Program (CWMP) noted the presence of Painted Turtles in Baie du Doré in 2019 and 2020 [R-65][R-66].

Details on the additional turtle species from 2017 to 2022 have and can continue to be discussed with Indigenous Nations and Communities as requested. However, based on SAR status, disclosure in a public forum is not permissible and will not be included.

14.15 Amphibians

Amphibians are documented on site through a combination of formal surveys and incidental observations during vehicle wildlife interaction surveys, pedestrian surveys, and employee sightings.

Targeted nocturnal amphibian vocalization surveys were conducted in the spring and summer (April, May and June) of 2017 to 2022, following the methodology described by Bird Studies Canada/Environment Canada Marsh Monitoring Protocol [R-67]. Five different frog species were typically identified during these surveys, with the American Toad (*Anaxyrus americanus*) also being heard in some years. In addition to the targeted vocalization surveys, incidental frog observations were made throughout the year during other field studies. In 2022, a survey for salamanders and newts was performed. This survey revealed Yellow-spotted salamanders (*Ambystoma maculatum*) and Eastern Red-Spotted newts (*Notophthalmus viridescens*) along with Yellow-spotted salamander egg masses.

Incidental observations were noted of Spotted Salamanders in 2019, 2020 and 2022 and Eastern Red Spotted Newts in 2019 and 2022. The Red Eft phase of the Eastern Red Spotted Newt was seen during snake coverboard surveys in 2021 and 2022.

14.16 Aquatic Environment

Areas providing aquatic habitat on and around the Bruce Power site were identified as those that meet the definition of a water body under the *Environmental Protection Act*, Part XV.1, Ontario Regulation 153/04 [R-68]:

“A permanent stream, river or similar watercourse or a pond or lake, but does not include a pond constructed on the property for the purpose of controlling surface water drainage.”

Two categories of aquatic habitat were considered in the recent 2022 ERA. The first consisted of those that met the definition provided above, including offshore and nearshore areas of Lake Huron in the immediate vicinity of the Bruce Power site. Bottom substrates in the lake are generally bedrock or cobbles and boulders with some sand in local embayments [R-69]. Habitat in the nearshore and on-site areas includes:

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- Bruce A discharge channel extends approximately 300 m into Lake Huron. The channel lined with armourstone and has a bedrock bottom. A dock facility also exists in this channel and bottom substrates in depositional areas are sand and organic silt.
- Bruce B discharge channel was excavated out of bedrock and is lined with armourstone along much of its length. Substrates within the channel are almost exclusively exposed bedrock. A large triangular area was constructed off the main channel to accommodate a boat dock. Similar to the Bruce A discharge channel, Bruce B also has sand and organic silt in areas of lower velocity flows.
- Lake Huron shoreline from McRae Point to the south through Loscombe Bank to the North. Inverhuron Bay, Holmes Bay and MacPherson Bay are small embayments between McRae Point and Douglas Point with similar substrates to main lake basin.
- Baie du Doré is an embayment along the eastern shore of Lake Huron immediately north of the Bruce Power site. The bay is bisected by two rock/cobble shoals that run northeast, parallel to the Lake Huron shoreline. Shoals are exposed in low water years and subsequent mixing of water throughout the bay is affected. Recently, with higher water levels, shoals have been completely under water.
- Stream C is a cool--cold water stream which was originally part of the Little Sauble River watershed which drains into Inverhuron Bay to the south of Bruce B. Portions of Stream C were altered during the initial development of the Bruce Power site in the 1950s when it was diverted to the north. It presently flows in a constructed channel across the northeast corner of the Bruce Power site where it enters Baie du Doré immediately north of Bruce A. Approximately 1.5 km of Stream C is located on the Bruce Power site. The lower 800 m of the stream flows outside of the property boundary and empties into Baie du Doré.

In general, aquatic communities in these areas include aquatic vegetation (macrophytes), phytoplankton, zooplankton, benthic invertebrates, and fish. Macrophytes can be classified as emergent, submergent, and floating aquatic vegetation. Macrophytes grow in sheltered areas along the Lake Huron shoreline including in the Bruce A and Bruce B discharge channels. In the Bruce A and B discharge channels, submerged macrophytes occur in sheltered areas with low flow velocity; emergent vegetation is limited. The dominant macrophyte in the Bruce A discharge channel is *Elodea* sp., and in the Bruce B discharge channel it is *Myriophyllum* and *Potamogeton* species. These macrophytes are resilient and tolerant to temperature fluctuations and increased flow velocities. A number of *Potamogeton* sp., such as *Potamogeton alpinus*, *Potamogeton malaianus*, and *Potamogeton perfoliatus*, are tolerant to temperature fluctuations and can develop thermotolerance acclimation and can morphologically adapt to water velocity changes. *Elodea* sp. (e.g., *Elodea canadensis*) can withstand turbulent water velocities and *Myriophyllum* sp. (e.g., *Myriophyllum spicatum*) have a high temperature optimum for photosynthesis. Overall, increases in water temperature, as a result of thermal plumes, have been shown to increase macrophyte growth in temperate lakes and can cause localized changes to species composition [R-7].

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Plankton is a general term referring to small, usually microscopic organisms that live suspended in the water. Plankton is sub-divided into two different groups: phytoplankton (algal component of plankton community) and zooplankton (free-floating animals such as small crustaceans and rotifers). Previous studies have shown that the density and diversity of phytoplankton in Lake Huron has been low as a result of the low nutrient concentrations. Thermal plumes have the potential to increase phytoplankton growth in the discharge channels. However, the effects of the thermal discharge on phytoplankton in the vicinity of Bruce Power are likely small, due to low nutrient concentrations, high flow velocities resulting in scouring, and the overall hydraulic forces in the discharge channels. While short-term temperature fluctuations from a thermal plume typically have a minimal effect on zooplankton because of their high reproductive rates, prolonged or repeated warming events can be lethal and change zooplankton community composition and abundance. The zooplankton community in the vicinity of Bruce Power is unlikely to be impacted by the thermal discharge due to the limited periods of time that the Bruce A and Bruce B discharge channels exceeded temperatures that are associated with increased growth rates or lower egg production. There is the potential for increased flow velocity resulting from the discharge jet in Bruce A and Bruce B discharge channels to displace zooplankton. The effect of zooplankton displacement is limited to the flow velocity fields surrounding the discharges, which are relatively small in spatial extent compared to rest of Lake Huron [R-7].

A study of benthic invertebrates along the shoreline near Bruce Power will be completed in 2024. This is a follow-up- to a similar study that was conducted in 2012 [R-70]. The 2012 study included sampling of benthic invertebrates and aquatic macrophytes in 15 locations that were associated with existing temperature loggers and historical benthic invertebrate sampling. Results found a low diversity of benthic invertebrates across all sample locations. Abundance was low in most areas too, except for the Bruce A discharge and Baie du Doré which are more sheltered. Previously common native species were outnumbered by the invasive *E. ischnus*, which aligns with changes seen in the rest of Lake Huron. Finally, there was no evidence of a thermal effect on larval instar development. Macrophyte abundance was low at most sites [R-31].

The fish community of Lake Huron can be divided into two general categories: offshore and nearshore. The offshore fish community is generally composed of species that use open or deep-water habitats for most of their life cycles. Species included in this category include but are not limited to Round Whitefish (*Prosopium cylindraceum*), Lake Whitefish (*Coregonus clupeaformis*), Lake Trout (*Salvelinus namaycush*), and Rainbow Smelt (*Osmerus mordax*) [R-71]. These fish occupy nearshore areas for spawning, nursery habitat and possible feeding and prefer cool, deep, offshore waters, particularly during the warmer summer months.

Each of SON and HSM have expressed a strong connection to Lake Huron and the Lake Huron fishery. Traditional, historical, and modern fishery uses include harvesting fish for food (subsistence), social and ceremonial uses and, in the SON's case, commercial purposes. SON and HSM have each indicated that they value the fishery and have an interest in its protection.

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In 2013, the MNRF announced that an agreement had been signed with the SON to manage the commercial fishery in the waters of Lake Huron and Georgian Bay around the Bruce Peninsula extending from Point Clark on the Lake Huron side to Craigeleith on the Georgian Bay side [R-72]. The terms of the agreement state that the SON will be responsible for using catch sampling to monitor the commercial landings. The SON have stated in prior submissions relating to Bruce Power's licencing, that SON members and their ancestors have been fishing these waters for sustenance and as the basis of trade and commerce for many hundreds of generations, and they continue to do so today. While Lake Whitefish have significant cultural and economic significance to SON, SON's fishing rights are not species specific and include the right to harvest all species of fish [R-73].

The nearshore fish community is comprised of those species that prefer shallow, warmer water such as the Smallmouth Bass (*Micropterus dolomieu*), Yellow Perch (*Perca flavescens*), Rock Bass (*Ambloplites rupestris*) and Mimic Shiner (*Notropis volucellus*). Smallmouth Bass nesting surveys to monitor local bass populations have occurred annually from 2009 (Bruce A and Bruce B discharge channels) and 2010 (Baie du Doré) to 2020. These areas provide excellent Smallmouth Bass nesting habitat as there is abundant spawning conditions present (adequate depth, gravel/sand substrate and shelter from prevailing winds/wave action).

Beginning in the fall of 2018, Bruce Power and SON collaborated to implement a SON-led aquatic monitoring program, called the SON CWMP, with the first field season in 2019. This program aims to enhance the existing body of knowledge compiled through Bruce Power's routine environmental monitoring. The program focuses on the nearshore areas of Lake Huron across SON Territory, with between 40 and 70 sites sampled annually from Inverhuron to the Nottawasaga River. Nearshore areas are the core focus of the program because of the importance of this habitat to fish species for at least one part of fish life history for feeding, rearing or nursery needs and because nearshore areas are more heavily impacted by human-induced stressors. The program also aims to build a comprehensive inventory of data (i.e., fish, vegetation, water quality and temperature) for use in consultation and SON decision making and processes regarding new and ongoing projects. The program itself extends beyond the existing monitoring boundary of Bruce Power site.

The CWMP is implemented by SON members through the SON EO. The results are shared annually with Bruce Power and are incorporated into the ERA, as well as other Environmental Monitoring Processes, and is a complementary measure in Bruce Power's *Fisheries Act* Authorization. The continuation and possible expansion of this program will improve baseline understanding of Lake Huron and Georgian Bay, including knowledge of the existing fish community, water temperature, water quality, wetland habitat and SON Ecological Knowledge. This will enhance SON Knowledge of the current conditions and health of coastal habitats and wildlife (especially fish) across the area being monitored and will allow differences between sites and over time, including climate-related changes, to be monitored. This improved understanding of the aquatic environment will benefit all users.

The Baie du Doré PSW is also being monitored as part of a partnership between Bruce Power and the Invasive Phragmites Control Centre (IPCC) to understand the impact of Phragmites australis on fish communities and to understand the impact of control activities on recovery of native plants and fish habitat. Fyke nets are set in the emergent zone in high, intermediate,

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and low/no density invasive *Phragmites australis* communities. The nets are left overnight and sampled the following morning and then reset for a second night. Sampling takes place during the spring, to capture spawning activity and then again in August/September during the peak plant biomass period. The Baie du Doré nearshore fish community was also monitored by the CWMP program using fyke nets in 2019 – 2022. Results of these monitoring programs can be found in the 2022 ERA. The second category of aquatic habitat assessed in the 2022 ERA included permanent drainage features that contain water year-round.

Existing Bruce A and Bruce B water intake uses water from Lake Huron in once-through cooling systems, in which water is drawn in at deep, offshore intakes and then pumped through a series of condensers before being returned to the lake via discharge channels. The once through cooling water is not in contact with the nuclear reactors and thus does not result in radiological emissions to the lake. The once-through cooling system at each station supplies continuous circulation of water that cools and condenses steam from the turbines which are generating electricity. Through this process, the lake water is warmed, as the steam system is cooled, before being discharged to the lake. Limits on the effluent temperature and difference between effluent and intake temperature are set by Ontario's MECP in Environmental Compliance Approvals (ECAs). Federal guidance for the assessment of freshwater thermal discharges is provided by ECCC in Guidance Document: Environmental Effects Assessment of Freshwater Thermal Discharges. Bruce Power uses modelling of the thermal effluent from the Bruce Power site using a lake-wide model. Thermal models provide valuable spatial and temporal information about temperatures at various locations potentially affected by thermal effluent that cannot be adequately quantified with point source temperature loggers. Historically, the Bruce Power thermal plume under warm water conditions (i.e., lake water above 4°C, in the spring, fall and summer) was described as extending 23 km northeast alongshore from Bruce A, 15 km southwest from Bruce B and up to 3 km offshore. Under cold water conditions (i.e., lake water below 4°C in the winter), the Bruce Power thermal plume is described as extending approximately 10 km northeast and up to 8 km offshore. Overlap of the Bruce A and Bruce B lake surface plumes is estimated to occur less than 8% of the time. Figure 14 shows the Local Study Area for the 2022 ERA and surface thermal monitoring site locations used in the 2022 thermal risk assessment. This model serves as a baseline example of how thermal effluent from the proposed Project would be assessed [R-53].

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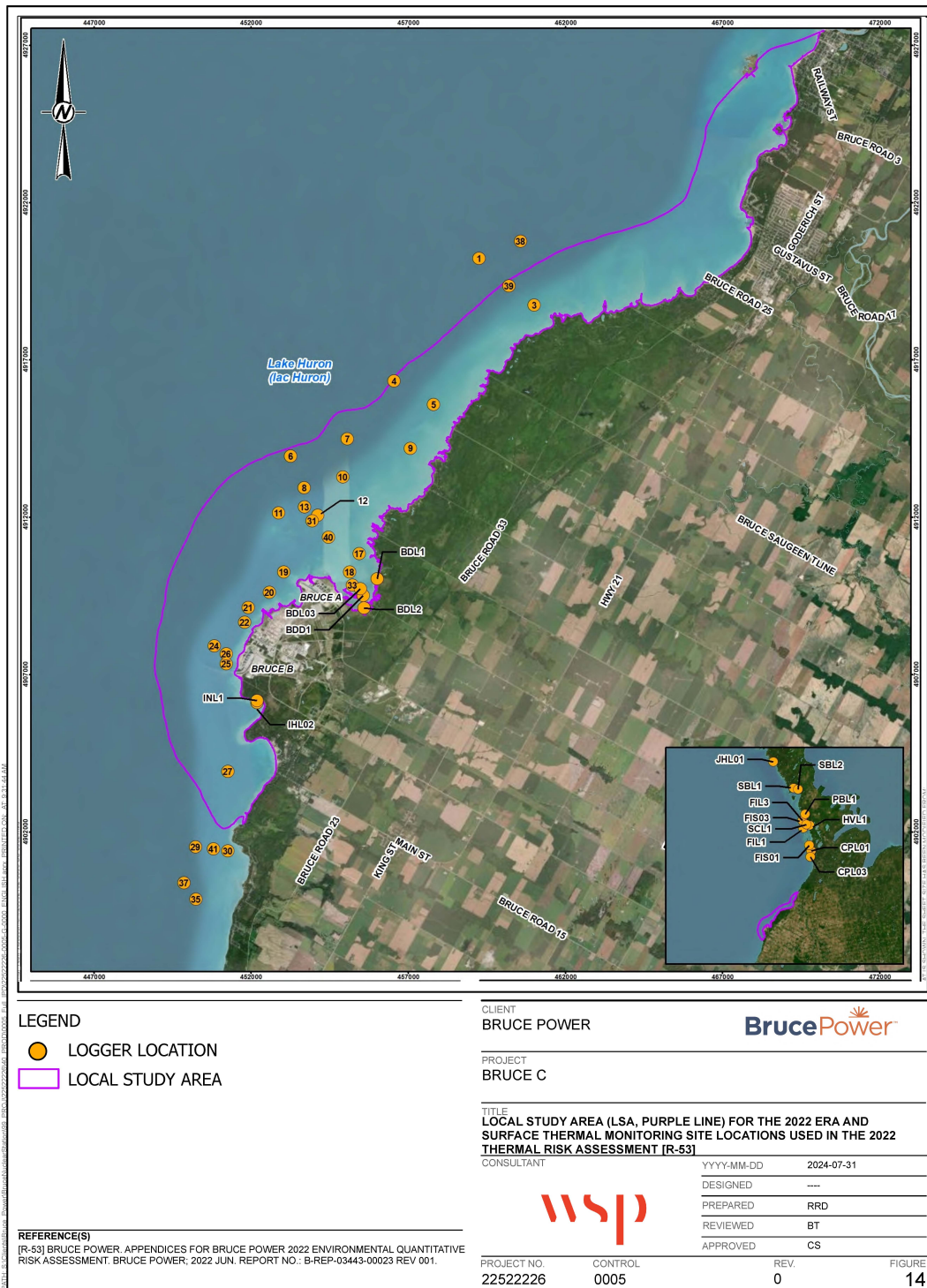


Figure 14: Local Study Area for the 2022 ERA and Surface Thermal Monitoring Site Locations used in the 2022 Thermal Risk Assessment [R-53]

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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 the radiological releases from normal operations on the Bruce Power site. The REM data implicitly reflects the influence of releases from all Bruce Power licensed facilities as well as facilities within or adjacent to the Bruce Power site boundary that are owned by other parties. The program involves the annual collection and analysis of environmental media for radionuclides specific to nuclear power generation. The program design is based on risk and is informed by a radionuclide and exposure pathways analysis. Monitoring locations are conservatively selected to be representative of locations of exposure of representative persons and also based on practical considerations, including the availability of samples and participation of local residents and farmers. Sampling locations are grouped by proximity to the Bruce Power site and these groups include indicator, area near and area far locations. Generally, radionuclide concentrations decrease with distance from the Bruce Power site.

Each year, Bruce Power gathers information to calculate the radiological dose to representative persons living near the Bruce Power site. This includes meteorological data, analysis of local environmental media and radiological emissions and effluents from all sources near or within the Bruce Power site boundary. Following the methodology outlined in CSA N288.1 Guidelines For Modelling Radionuclide Environmental Transport, Fate, And Exposure Associated With The Normal Operation Of Nuclear Facilities [R-74] and using an environmental transfer model (IMPACT 5.5.2), a dose is calculated for each representative person at three age classes – adult, child, and infant. A representative person is determined using the lifestyle characteristics identified in the Site-Specific Survey and is defined as an individual who receives a dose that is representative of the most highly exposed individuals in the population. The most limiting result, or highest calculated dose, is used as the annual dose to public and all dose calculation inputs and results are published annually in Bruce Power's Environmental Protection Report.

For the 31st consecutive year, Bruce Power's contribution to the annual dose of a member of the public is less than the lower threshold for significance ($<10 \mu\text{Sv}/\text{year}$) and is considered *de minimus*. This maximum dose is a small fraction of a percent of the legal limit of $1,000 \mu\text{Sv}/\text{year}$.

The 2022 ERA examined all radiological environmental monitoring data available for 2016 – 2020 and assessed the risk to human and non-human biota, with the following conclusions:

- The radiation doses to members of the public residing in the area surrounding the Bruce Power site were less than 1% of the CNSC effective dose limit for a member of the public ($1 \text{ mSv}/\text{y}$);
- The radiation dose rates to non-human biota residing on or near the Bruce Power site are less than 1% of the applicable UNSCEAR benchmark value; and

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- 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].

14.18 Air Quality

Conventional air emissions are held to performance standards stipulated in Environmental Compliance Approval (ECA) for Air Number 7477-8PGMTZ which incorporates all non-radiological air emission sources on site. Air contaminants of concern are modelled for all non-negligible sources in worst-case scenarios. Estimated emission rates are then analyzed to ensure regulatory limits at the Point of Impingement are met. While Bruce Power is bound by the ECA for Air performance limits, for current operations, Bruce Power has operational flexibility to do things like modify the location of emissions sources or add new buildings and exhaust stacks, once it can be demonstrated that it will remain within these limits. One modification was made in 2022 which demonstrated compliance with the Point of Impingement limits (as per Ontario Regulation 419/05, [R-75]) and the conditions of Bruce Power's ECA for Air. Existing baseline air quality information will be utilized to inform the IA.

14.19 Noise

Noise investigations were conducted annually between 2015 and 2020. The study revealed that changing meteorological conditions influence the propagation of sound from the stations (i.e., Bruce Power is slightly audible during periods of low background noise).

A Noise Control Investigation for the four rooftop deaerator vents at Bruce B was conducted using sound level measurements and source measurements collected during the 2015 and 2016 Noise Monitoring Programs [R-76]. The sound power emission measurements collected from each of the four deaerator vents at Bruce B in 2015 were input to an acoustical model of the Bruce Power site and surrounding area to determine predicted sound levels at locations within the surrounding community, with a worst-case predicted sound level of 33 decibels A (dBA) at Lake Street, the facility is well below the MECF applicable criteria.

In order to mitigate the sound level exceedances, a project was initiated in 2018 to install silencers on the four deaerator vents at Bruce B affording a minimum of 30 dBA of attenuation. A silencer was installed on the Unit 8 deaerator vent in October 2018. A sound level measurement was collected from the Unit 8 deaerator vent following the installation of the vent silencer and compared to measurements collected in 2015. The sound level measurement confirmed that an overall reduction of 31dBA was achieved relative to the unsilenced vent (4 by-pass valves open), exceeding the noise reduction target of 30dBA. In addition, the sound from the Unit 8 deaerator vent is no longer tonal (high frequency hum/whistle).

Remaining silencers were installed throughout 2019, on the Unit 7 deaerator vent in March; the Unit 6 deaerator vent in May; and the Unit 5 deaerator vent in October. A two-week noise monitoring campaign was completed in August 2019 to assess the change in sound levels

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following the installation of Unit 6, Unit 7 and Unit 8 deaerator vent silencers [R-77]. Unit 5 was in outage at the time of the campaign. The distinct tone that was audible from all four deaerator vents prior to installation of the silencers was completely inaudible with Unit 5 shutdown, which is an indication of the effectiveness of the silencers.

A Noise Investigation was conducted for a one-week period in July 2020 [R-78]. During the investigation, natural sounds were typically dominant. Bruce Power was faintly audible when background sound was lower. During periods where the contribution of background sound was at a minimum, the sound levels at Lake Street and within Inverhuron Provincial Park were as low as 22 to 24 dBA, which is well within the applicable MECP criterion of 40 dBA.

14.20 Land Use and Resources

The Bruce Power site is located in the Municipality of Kincardine. According to the Municipality of Kincardine's Comprehensive Zoning By-law, the Bruce Power site is zoned General Industrial (Special Zone M1-c [R-79]). The County of Bruce Official Plan identifies an active and closed landfill on the Bruce Power site, as well as shoreline development areas to the northeast of the site and hazard lands area to the east [R-80]. Land use in the surrounding municipalities is dominated by controlled development agricultural lands and small urban communities. The transportation system includes, County Road 23 (arterial road), Provincial Highway 21 (arterial road), Concession Roads 2, 6 (local collector roads) and Country Road 20, and a number of other local roads. A band of woodland creates a natural landscape buffer to views of the Bruce Power site. Bruce Concession 2, Concession 6, County Road 20 and Tie Road provide the main travel corridors through which most of these landscapes can be viewed and accessed.

14.21 Cultural and Physical Heritage

Presently, the Municipality of Kincardine has a total of 42 buildings designated as properties of cultural heritage value or interest under the Ontario Heritage Act (Part IV). Similarly, Southampton and Port Elgin collectively have 14 properties of cultural heritage value or interest under the Ontario Heritage Act (Part IV). Cultural landscape heritage resources in the region include the Kincardine Lighthouse (c. 1880) and Walker House (c. early 1850s), both located in downtown Kincardine, and to the northeast of the Bruce Power site, the town of Southampton's range lights (c. 1903) that operate in conjunction with the Chantry Island Lighthouse (c. 1859).

In 2006, the Douglas Point site was recognized by the Ontario Heritage Trust with a provincial plaque for its contribution to the development of commercial scale CANDU reactors.

In 2009, a Stage 2 Archaeological Assessment was completed to support the proposed New Build Project and other proposed projects at that time. The Assessment identified four culturally sensitive areas [R-81]. As part of the Site Suitability Analysis, the areas of Indigenous importance based on the 2009 Assessment were mapped as exclusions (i.e., not available for development). Bruce Power will work with Indigenous Nations and Communities on the methodology for both Marine and Terrestrial Archaeological Assessments that are proposed to be completed for the Project.

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14.22 Cumulative Effects

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). The assessment must consider those effects of the Project and activities that may act cumulatively in space and time (past and future), characterization of potential cumulative effects, identification of mitigation and assessment residual effects. The form of cumulative effects assessment will vary by Valued Component (VC) (i.e., quantitative vs qualitative) [R-82].

15.0 HEALTH, SOCIAL AND ECONOMIC CONTEXT

The Municipality of Kincardine has a population of 12,268 as reported in the 2021 Census [R-83]. The Municipality of Kincardine contains two urban centres and several small communities within 25 km of the Bruce Power site. The urban areas are the Town of Kincardine and Village of Tiverton. Other communities in the Municipality of Kincardine include Inverhuron, Glammis, Bervie, Underwood, Millarton, Armow, and Scott Point. Immediately north of the Municipality of Kincardine is the Town of Saugeen Shores. The Town of Saugeen Shores has a population of 15,905 as reported in the 2021 Census and contains the communities of Southampton and Port Elgin. These two population centres are located within 30 km of the Bruce Power site.

The Bruce Power site is located within the Grey Bruce Health Unit [R-84]. The Grey Bruce Health Unit is responsible for carrying out mandatory requirements of the Health Protection and Promotion Act. Social services are predominantly administered at the county level. Bruce County provides both paramedic services and community paramedic services. Paramedic services offer emergency and immediate health care services. Community paramedic services deliver in home health care supports and can liaise with other health care providers to coordinate care for patients. Bruce County Emergency Medical Services (EMS) provides 24-hour ambulance services to all of Bruce County, with stations in Kincardine, Port Elgin, Walkerton, Chesley, Warton and Tobermory. The closest hospital to the Bruce Power site is the Kincardine Site of the South Bruce Grey Health Centre. The Kincardine hospital is currently undergoing a redevelopment project through the support from the Ministry of Health that will include a 2,000 square foot addition to the current hospital. To the north, the next closest hospital site is the Southampton Site of Grey Bruce Health Services. Both Kincardine and Southampton have 24-hour Emergency Rooms and in patient units. Both Emergency Rooms are equipped with Decontamination Rooms designed to treat radiologically contaminated patients.

The 2021 Census of Population recorded that the median total income of household in 2020 for Bruce County is \$87,000 [R-83]. According to the Grey Bruce Public Health, 60% of Grey Bruce residents rate their health as very good or excellent, and 97% of Grey Bruce residents feel satisfied or very satisfied with their lives. An estimated 20% of Grey and 18.4%

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of Bruce County children live in low-income households, although this varies greatly by local municipality. Through engagement on the IPD, it was identified that as of April 30th, 2024 there were 165 households who were actively experiencing homelessness in Grey and Bruce counties and of those, 127 report chronic homelessness. Chronic homelessness means a person has experienced homelessness six or more months in past twelve months. It was also noted that demand for emergency housing and homelessness support has increased substantially over the past several years.

Local communities rely on both water from Lake Huron and groundwater wells for their drinking water needs. Surface water from Lake Huron is treated through two water treatment plants including the Southampton Water Treatment Plant, and the Kincardine Water Treatment Plant. There is one drinking water well within the Bruce Power site located on the Hydro One property used for hand washing and toilet flushing only. The Municipality of Kincardine has two separate potable water supply systems for the town of Kincardine and the community of Tiverton. Through engagement on the IPD, it was also noted that there are several communal and private wells in close proximity to the Bruce Power site. The Municipality of Kincardine has two wastewater treatment plants, one for the town of Kincardine, and one for the Bruce Energy Centre. Bruce Power is in the process of executing a project to connect to the Kincardine municipal water system.

Bruce County, including Saugeen Shores and Kincardine, traditionally relied on agriculture and small-scale manufacturing as economic mainstays. Bruce County is bordered by both Lake Huron and Georgian Bay which offers more than 850 km of coastlines and beaches. Lake Huron and other larger watercourses such as the Saugeen River are popular destinations for recreational activities including boating, canoeing, and angling. In 2019, the Economic Impact of Tourism Report was completed by the Bruce County Economic Development team which concluded that in 2019, over 2.5 million people visited Bruce County, over 95% would likely visit again the following year and 2019 have an economic impact of tourism of \$326.7 million dollars [R-85].

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. The Major Component Replacement Project began in January 2020 and focuses on the replacement of key reactor components in Units 3-8. The program will secure an estimated 22,000 jobs directly and indirectly from operations, and an additional 5,000 jobs annually throughout the investment program, injecting billions into Ontario's economy. Approximately 60 supplier partners have also opened offices or manufacturing facilities in Bruce, Grey and Huron counties since 2016 and the majority of these organizations play a role in the Major Component Replacement Project. Bruce Power and the County of Bruce are working to transform the area into a clean energy-inspired economic hub and sustain the company as a world leader in the nuclear sector. Indigenous Nations and Communities and local municipalities had an opportunity to participate in the regulatory process for the Major Component Replacement Project during Bruce Power's 2018 License Renewal.

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Bruce Power has a substantial impact on the municipalities of Kincardine and Saugeen Shores, the tri-county region, and the province. In terms of the economic impact, the NII found that in 2020, Bruce Power's contribution to the provincial GDP was \$4.03 billion from direct, indirect and induced effects [R-87]. In 2020, employment income induced by the local nuclear sector supported \$1.43 billion in household spending in Bruce, Grey and Huron counties combined. The breakdown of this spend includes \$70 million spent on clothes and accessories, \$56 million in restaurants, and \$16 million in pet expenses [R-87]. In addition to entrepreneurial and clean energy jobs, there has been assessment growth from residential, commercial and industrial builds. More than \$233 million was paid into municipal taxation because of the clean energy sector in 2020, with the vast majority in the Bruce, Grey, Huron region [R-87].

Bruce Power has completed a Municipal Socio-Economic Existing Conditions Report to support the Impact Statement by characterizing community social, economic, and human health conditions, in addition to non-traditional land and resource use, which could experience effects as a result of the Project. Interviews to gather information about existing socio-economic conditions were conducted virtually in December 2023, and January and April 2024. Key informants interviewed for the Project, included representatives of the following organizations. Additional key informants interviewed for the Project provided information anonymously.

- Bluewater District School Board;
- Brightshores Health System;
- Bruce County;
- Grey County;
- Huron County;
- Bruce-Grey Catholic District School Board;
- Georgian College;
- Municipality of Kincardine;
- South Bruce Grey Health Services; and
- Town of Saugeen Shores.

Bruce Power will engage with SON, HSM, and MNO, to develop scope characterizing health, social, economic conditions, and Indigenous Knowledge and/or other information to be defined by each Indigenous community.

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PART D: FEDERAL, PROVINCIAL, TERRITORIAL, INDIGENOUS AND MUNICIPAL INVOLVEMENT**16.0 FINANCIAL SUPPORT THAT FEDERAL AUTHORITIES ARE, OR MAY BE, PROVIDING TO THE PROJECT**

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.

17.0 FEDERAL LANDS THAT MAY BE USED FOR THE PURPOSE OF CARRYING OUT THE PROJECT

The Project will not be utilizing any federal lands.

18.0 A LIST OF ANY JURISDICTIONS THAT HAVE POWERS, DUTIES OR FUNCTIONS IN RELATION TO AN ASSESSMENT OF THE PROJECT'S ENVIRONMENTAL EFFECTS

The Project is proposed to be located at the Bruce Power site where there are existing operations. Bruce Power is licensed to operate Bruce A and Bruce B under the CNSC Power Reactor Operating Licence, PROL 18.03/2028 [R-5], pursuant to the *Nuclear Safety and Control Act*, Section 24(2) [R-89], and the *General Nuclear Safety and Control Regulations*, Section 6. There are full-time CNSC staff at Bruce A and Bruce B who conduct inspections that evaluate operations to ensure Bruce Power is in compliance with both licence conditions as well as regulatory requirements.

Bruce Power may initiate federal and provincial permit application and approval processes concurrently with the IA. A preliminary list of potential permits and approvals that may be required for the lifecycle of the Project is included in Appendix B. The potential permits and approvals will continue to be refined as the Project progresses.

For projects regulated under the Nuclear Safety and Control Act, IAAC and the CNSC will collaborate in conducting an integrated impact assessment under the IAA. The following jurisdictions may also have powers, duties, or functions in relation to the assessment of the Project:

Federal:

- Fisheries and Oceans Canada;

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- Environment and Climate Change Canada;
- Indigenous Services Canada;
- Federal Economic Development Agency for Southern Ontario;
- Women and Gender Equality Canada;
- Natural Resources Canada;
- Health Canada; and
- Transport Canada.

Provincial:

- Technical Standards and Safety Authority;
- Ontario Ministry of Environment, Conservation and Parks; and
- Ontario Ministry of Natural Resources and Forestry.

PART E: POTENTIAL EFFECTS OF THE PROJECT**19.0 A LIST OF ANY CHANGES TO COMPONENTS OF THE ENVIRONMENT THAT ARE WITHIN THE LEGISLATIVE AUTHORITY OF PARLIAMENT**

As a result of carrying out of the Project, examples of expected changes to components of the environment that are within the legislative authority of Parliament (i.e., fish, fish habitat, aquatic species, SAR, and migratory birds) are summarized in Table 6, however environmental effects will continue to be identified through the IA process. Examples of standard mitigation have been included to inform this IPD; however, mitigation will continue to be identified through the IA process, including through engagement with Indigenous Nations and Communities.

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Table 6: Changes to the Environment under Federal Legislation – Potential Effects

Factor/Project Phase	Potential Environmental Effects	Standard Mitigation Examples
Fish, Aquatic Species and Aquatic Habitat, as defined in subsection 2(1) of the Fisheries Act [R-90] and aquatic SAR as defined in subsection 2(1) of the Species at Risk Act [R-91]		
Site-Preparation	Potential changes to water quality from run-off during removal of vegetation (during grubbing and clearing), potential demolition and excavation.	Control run-off from work areas using storm water run-off management programs.
	Potential changes to shoreline areas (protection strategies) and connected drainage ditches may result in local physical changes to aquatic habitat and aquatic biota.	Conduct shoreline assessment to determine offsets, if necessary.
	Facility site preparation activities may result in changes to aquatic biota due to changes in habitat, temporary sensory disturbance (underwater noise and vibration) and lake water quality (sediment).	Use of explosives within acceptable ranges (particle velocity and immediate pressure changes) to minimize effect to aquatic biota.
	Cooling water intake tunnel and discharge channel activities may result in physical changes to aquatic habitat.	Placement of intake tunnel and discharge channel in locations of least impact (as determined by BATEA assessment).
	Cooling water intake tunnel and discharge channel activities may affect aquatic biota due to changes in habitat, temporary sensory disturbance (underwater noise and vibration) and lake water quality (sediment).	Use of explosives within acceptable ranges (particle velocity and immediate pressure changes) to minimize effect to aquatic biota and schedule activities to minimize impact.
	Aquatic SAR biota may be affected through the activities related to the cooling water tunnels, i.e., physical changes to habitat and sensory disturbance.	Conduct most impactful construction activities during times when SAR populations are at seasonal minimum (i.e., blasting).
Construction and Commissioning	Facility construction activities may result in changes to aquatic habitat due to wastewater discharges affecting water quality.	Minimize and manage discharges by appropriate controls and monitoring.
	Facility construction activities may result in changes to aquatic biota due to changes in habitat, temporary sensory disturbance (underwater noise and vibration) and lake water quality (sediment).	Use of explosives within acceptable ranges (particle velocity and immediate pressure changes) to minimize effect to aquatic biota.
	Construction activities of cooling water intake tunnel and discharge channel may result in physical changes to aquatic habitat.	Placement of intake tunnel and discharge channel in locations of least impact (as determined by BATEA assessment).
	Construction activities of cooling water intake tunnel and discharge channel may affect aquatic biota due to changes in habitat, temporary sensory disturbance (underwater noise and vibration) and lake water quality (sediment).	Use of explosives within acceptable ranges (particle velocity and immediate pressure changes) to minimize effect to aquatic biota and schedule activities to minimize impact.
	Aquatic SAR biota may be affected through the construction of cooling water tunnels, i.e., physical changes to habitat and sensory disturbance.	Conduct most impactful construction activities during times when SAR populations are at seasonal minimum (i.e., blasting).
Active Operations and Maintenance	Operation of cooling water tunnel and discharge channel may result in changes to aquatic habitat through sensory disturbances, changes to lake water circulation and lake water quality, and lake temperature. Impingement and entrainment of fish species at all life stages.	Inclusion of mitigation strategies as determined by BATEA assessment.
	Increase in contaminant concentrations in lake during operation affecting aquatic habitat and biota.	Operate facility within emission limits. Inclusion of mitigation strategies as determined by BATEA assessment.
	Aquatic SAR biota may be affected through the operation of cooling water intake (i.e., impingement and entrainment), and changes to lake water circulation and lake water quality, and temperature.	Inclusion of mitigation strategies as determined by BATEA assessment.

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Factor/Project Phase	Potential Environmental Effects	Standard Mitigation Examples
Safe Storage Operation	Reduction in local water temperature from cessation of operations will affect some aquatic habitat during Storage with Surveillance (SWS) phase.	Gradual shut down of individual reactor units as per decommissioning plan.
Decommissioning	Changes in quantity and quality of water run-off from the site during dismantling, demolition activities may impact aquatic habitats and biota.	Control run-off from work areas using storm water runoff management programs.
	Potential infilling of intake tunnel and discharge channel could affect some aquatic habitat and biota during site restoration phase.	If these activities are required by decommissioning plan, then mitigation and off-set commitments may be required under the <i>Fisheries Act</i> .
Abandonment	Changes in quantity and quality of water run-off from the site during site restoration may impact aquatic habitats and biota.	Control run-off from work areas using storm water runoff management programs.
Migratory Birds, as defined in subsection 2(1) of the Migratory Birds Convention Act, 1994 [R-92] and avian SAR as defined in subsection 2(1) of the <i>Species at Risk Act</i> [R-91]		
Site-Preparation	Changes to vegetation communities (e.g., nesting habitat), wildlife communities, wildlife habitat, or natural heritage systems (e.g., removal of vegetation during grubbing and clearing, sensory disturbance, individual mortality).	Consideration of avian habitats during site selection process to minimize impact.
	Avian SAR biota may be affected by site preparation activities which may result in changes to vegetation communities, wildlife communities, wildlife habitat, or natural heritage systems (e.g., removal of vegetation during grubbing and clearing).	Consideration of avian habitats during site selection process to minimize impact.
	Changes to migration abilities and bird calls due to temporary increase in ambient noise and light.	Maintain noise and light levels to acceptable limits.
	Temporary changes in air quality (dust/fumes) from site-preparation activities that could affect avian health.	Minimize dust and air emissions by standard site watering and emission monitoring activities.
	Avian SAR may be affected during site preparation activities by changes noise, light and air quality.	Minimize light, noise and air emissions through standard mitigations.
Construction and Commissioning	Changes to migration abilities and bird calls due to temporary increase in ambient noise and light.	Maintain noise and light levels to acceptable limits.
	Temporary changes in air quality (dust/fumes) from construction that could affect avian health.	Minimize dust and air emissions by standard site watering and emission monitoring activities.
	Avian SAR may be affected during construction activities by changes noise, light and air quality.	Minimize light, noise and air emissions through standard mitigations.
Active Operations and Maintenance	Avian health may be affected by decreases in air quality due to chemical and radiological emissions.	Ongoing emission reduction strategies and routine monitoring.
	Artificial light at night may affect bird migration patterns and increase in collisions with infrastructure.	Minimize exterior light to acceptable standards.
	Increase in noise could affect some bird species by interrupting mating calls.	Minimize noise emissions to acceptable standards.
	Avian SAR biota may be affected by site operations due to light, noise and air quality.	Minimize light, noise and air emissions to acceptable standards.
Safe Storage Operation	Increase in migratory birds onsite due to a relative decrease in site activity (approximately 30 years).	Mitigation likely not required.
	A reduction of feeding grounds and nesting locations that were artificially created from the warm water discharge.	Gradual shut down of individual reactor units as per decommissioning plan.
Decommissioning	Temporary effects on birds due to noise and dust from dismantling and demolition phase of decommissioning (at least a 10-year period per reactor unit).	Minimize work producing large amounts of noise and dust during bird migratory periods.
	Decreases in air quality due to release of chemical or radiological contaminants during dismantling and demolition phase could affect avian health.	Use of temporary containment structures and local filtered ventilation as per decommissioning plan.
Abandonment	Changes in air quality (dust) from the site during site restoration may impact avian habitats and biota.	Utilization of dust mitigation measures.

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

20.0 POTENTIAL CHANGES TO ENVIRONMENT ON LANDS OUTSIDE OF ONTARIO AND CANADA

The Project is located in Ontario and no changes to the environment in another province or outside Canada are anticipated. The Project is located on the eastern shore of Lake Huron. Lake Huron is a part of the Great Lakes-St. Lawrence water system which is transboundary basin shared between Canada and the United States. Potential effects and impacts will be further assessed in detail in the Impact Statement.

The project is located on the eastern shore of Lake Huron. Lake Huron is a part of the Great Lakes-St. Lawrence water system which is transboundary basin shared between Canada and the United States. A memorandum of understanding (MOU) was recently signed (in March 2024) by the IJC, Great Lakes Commission (GLC) and the Great Lakes Fisheries Commission (GLFC) for these 3 groups to advance shared goals and objectives with regards to the balanced and sustainable use of Great Lakes-St. Lawrence River basin water resources [R-93]. Each commission plays a distinctive but complementary role in management of the Great Lakes and represent important stakeholders in advancing sound policies and projects. The IJC helps Canada and the United States prevent and resolve issues over the use of shared waters (including via the Great Lakes Water Quality Agreement); the GLC represents the interests of the Great Lakes provinces and states on important issues; and the GLFC ensures fishery management is based on science and highly coordinated among the state, provincial, and U.S. tribal jurisdictions. Bruce Power supports the GLFC by via a Canadian advisor to the GLFC. A Canadian committee of advisors, made up of key stakeholders and leaders in the region is appointed by the Great Lakes Fishery Commission. The advisors examine and communicate on important issues to the Great Lakes fishery and ecosystem. The advisors also assist the commissioners in making informed decisions in support of Commission objectives.

Bruce Power also reviews the Great Lakes Fisheries Management Objectives as part of the *Fisheries Act* Authorization. Sharing and awareness of the larger Lake Huron management plans allows Bruce Power to have the needed context and connection to the broader ecosystem objectives.

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 process is highly regulated, including provincial permits for water taking and reporting and imposing protective limits on water quality for waters returned to the lake. This ensures the conservation, protection, management and sustainable use of Ontario's freshwater resources. In our effort to uphold and support these goals, we monitor our usage, including the amounts returned directly to the lake with no chemical changes, and report on daily amounts drawn. Beyond considerations of water quantity management, we are committed to monitoring and ensuring the protection of the quality of water, and our fish habitats in and around our shores and the greater region [R-31].

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

21.0 POTENTIAL IMPACTS TO INDIGENOUS PEOPLES: PHYSICAL AND CULTURAL HERITAGE, TRADITIONAL LAND USE, HISTORICAL, ARCHAEOLOGICAL AND PALEONTOLOGICAL AND ARCHITECTURAL RESOURCES

Bruce Power has been engaging with SON, HSM, and MNO for many years, with Protocol / Relationship agreements dating to 2011, 2009, and 2012 respectively. Bruce Power has an understanding of current issues and concerns from Indigenous Nations and Communities as it relates to the Bruce Power site; however, Bruce Power recognizes that additional issues and concerns can evolve over time and will arise through ongoing engagement on the Project.

We understand that the prospect of new nuclear power generation may be associated with concerns about environmental impacts and at the same time may offer new opportunities to work together to address environmental issues and concerns and to expand our engagement on environmental monitoring, environmental protection, and mitigation measures.

For Indigenous Peoples, potential impacts to the environment can be intricately linked to potential impacts to Aboriginal and treaty rights and way of life, specifically those environmental impacts that may alter the physical and cultural ways that Indigenous Nations and Communities interact with and relate to the environment. It is for these reasons that environmental topics and engagement on the ways that the Bruce Power site interacts with the environment, have always been the focus of engagement with SON, HSM, and MNO.

For example, each of SON and HSM have expressed that the Lake Huron ecosystem and in particular the fish that inhabit this ecosystem are significant and any potential impacts on fish or water are of concern. Because of the expressed importance of the Lake Huron ecosystem, fish and fishing, the potential impacts of impingement and entrainment of fish (I&E) and thermal effluent associated with operation of the condenser cooling water intake system have always been key focus areas of engagement.

Bruce Power has routinely and directly engaged with SON, HSM, and MNO on environmental and regulatory topics and SON, HSM, and MNO have engaged directly with the Regulators. Environmental topics of focused engagement have in the past included:

- Fish impingement and entrainment (I&E)
 - Routine engagement on ongoing operations
 - Engagement on DFO *Fisheries Act Authorization*
- Thermal effluent
 - Routine engagement on ongoing operations
 - Engagement on MECP ECA for thermal effluent and flexibility.
- Climate change
 - Routine engagement on climate change and regional climate change projects.

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- Aquatic monitoring, assessment, and rehabilitation projects
- Mitigation measures
- Diet surveys (related to consumption of wild and local agricultural products and radiological dose)

Bruce Power will continue to engage with SON, HSM, and MNO to understand potential impacts resulting from the Project.

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 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.

See Table 7 for preliminary assessment of Project activities and potential impact on Indigenous Peoples.

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

22.0 POTENTIAL IMPACTS TO INDIGENOUS PEOPLES: SOCIAL, ECONOMIC AND HEALTH CONDITIONS

The following section provides a description of any change that, as a result of the carrying out of the Project, may occur to the health, social or economic conditions of Indigenous Peoples.

We recognize that census data is not the most reliable source of information as it relates to First Nations and Métis. We will report more information about social, health and economic conditions of the Indigenous Nations and Communities through our engagement. Bruce Power has made contributions through the Indigenous Community Investment Fund that supports many social initiatives for Indigenous Nations and Communities [R-94]. We are working with SON to explore and implement actions that Bruce Power can take to have a positive impact on the SON Communities to support improving social, economic and health conditions.

Bruce Power has been engaging with SON, HSM, and MNO for many years, with Protocol / Relationship agreements dating to 2011, 2009, and 2012 respectively. Through longstanding engagement, Bruce Power has worked with SON, HSM, and MNO to support the areas of training, employment, and economic and business development, and provides annual funding support for Indigenous Nation or Community-based programs. The prospect of new nuclear power generation may be associated with concerns about socio-economic impacts as well as with the prospect of new opportunities to work together to address these issues and to create benefits related to socio-economic and health conditions.

In order to identify potential impacts to social, economic and health conditions of Indigenous Peoples, Bruce Power reviewed prior assessments from previous regulatory reviews, and past and current engagement discussions, including any input provided on the IPD. Table 7 summarizes the preliminary assessment of Project activities and potential impact on Indigenous Peoples.

As outlined in Section 15.0, Bruce Power will, as part of the IA, engage SON, HSM, and MNO to discuss the criteria to be considered for the assessment of health, social, and economic conditions and how Indigenous Knowledge can further support these discussions and assessments.

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Table 7: Preliminary Assessment of Project Activities and Potential Impact on Indigenous Peoples

Factor/Project Phase	List of Activities, Infrastructure, Permanent or Temporary Structures and Physical Works	Section 21.0 Potential impacts to Indigenous Peoples: Physical and cultural heritage, traditional land use, historical archaeological and paleontological and architectural resources	Section 22.0 Potential impacts to Indigenous Peoples: Social, Economic and Health Conditions
<p>The potential environmental impacts listed below and in subsequent rows may impact the quantity and quality of aquatic and terrestrial habitats and species which could have the potential to impact cultural, ceremonial, subsistence, or commercial harvesting practices and activities and related social, health and economic conditions of Indigenous Peoples.</p>			
<p>Site-Preparation</p>	<p>Site preparation activities may include:</p> <ul style="list-style-type: none"> • Preparation of temporary construction areas; • Land clearance; • Surface clearing and grubbing, including demolition of existing structures; • Relocation or removal of existing below-grade utilities; • Installation of services and utilities; • Grading; • Construction of flood protection and erosion control measures; • Construction of stormwater management facilities; • Preparation of temporary or permanent new roads, road upgrades, and parking lots; • Materials laydown; • Installation of temporary construction facilities for equipment assembly, administration and personnel amenities; • Blasting to prepare foundations of reactor buildings and water intake and discharge structures; • Dewatering for site-preparation activities; • Procurement of components and equipment; • Delivery of components by road and tug-towed barge; • Excavation and temporary management of materials; and • Management of soil and waste generated by site preparation activities. 	<p>Potential direct and indirect impacts to fish and fish habitat.</p> <p>Potential direct and indirect impacts to aquatic invertebrate, plant, and nearshore wetland health.</p> <p>Potential direct and indirect impacts related to accidental spills released to the terrestrial and aquatic environments.</p> <p>Potential direct and indirect impacts to terrestrial environments, species and habitat connectivity related to increased human presence and vehicular traffic both on and off site.</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 environmental stressors, and climate change.</p>	<p>Changes to perception of risk and feelings of personal security and wellbeing related to the presence of a nuclear facility in proximity to Indigenous Communities.</p> <p>Potential effects of influx of nuclear workers and suppliers on demand for services such as health care, emergency response, childcare, and to the availability and affordability of local housing.</p> <p>Potential for increased availability of training, employment, and procurement opportunities.</p> <p>Potential direct and indirect impacts to health and well-being related to economic conditions.</p> <p>Potential indirect impacts to food security driven by changes to availability and accessibility of off-site lands for harvesting.</p> <p>Potential indirect impacts to cultural knowledge transfer driven by changes to availability and accessibility of off-site lands.</p> <p>Cumulative impacts on social, economic and health conditions related to the combined past, present and future impacts of Bruce Power’s operations, operations of the Project, other operations at the Bruce Power site (OPG, CNL, and Hydro One), and other local and regional projects.</p>

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

Factor/Project Phase	List of Activities, Infrastructure, Permanent or Temporary Structures and Physical Works	Section 21.0 Potential impacts to Indigenous Peoples: Physical and cultural heritage, traditional land use, historical archaeological and paleontological and architectural resources	Section 22.0 Potential impacts to Indigenous Peoples: Social, Economic and Health Conditions
<p>Construction and Commissioning</p>	<p>Construction activities may include:</p> <ul style="list-style-type: none"> • Construction of stormwater management facilities; • Construction of water intake and outfall; • Construction of switchyard; • Dewatering of construction area; • Blasting to prepare foundations of reactor buildings and cooling channels and/or tunnels; • Use of waste rock as infill for power block area, road base and building foundations; • Management of waste generated by construction activities; • Installation of loading dock for delivery of heavy equipment; • Installation of any additional temporary construction facilities for equipment assembly, administration and personnel amenities; • Procurements of components and equipment; • Materials laydown; • Construction of all plant buildings and structures; • Delivery of components by road and tug-towed barge; • Assembly of modules on-site; • Lifting of modules via heavy lifting cranes; and • Installation of equipment. 	<p>Potential direct and indirect impacts to fish and fish habitat.</p> <p>Potential direct and indirect potential impacts to aquatic invertebrate, plant and nearshore wetland health.</p> <p>Potential direct and indirect impacts related to accidental spills released to the terrestrial and aquatic environments.</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.</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 environmental stressors, and climate change.</p>	<p>Changes to perception of risk and feelings of personal security and wellbeing related to the presence of a nuclear facility in proximity to Indigenous Nations and Communities.</p> <p>Potential effects of influx of nuclear workers and suppliers on demand and cost of services such as health care, emergency response, childcare, and to the availability and affordability of local housing.</p> <p>Potential for increased availability of training, employment, and procurement opportunities.</p> <p>Potential direct and indirect impacts to health and well-being related to economic conditions.</p> <p>Potential indirect impacts to food security driven by changes to availability and accessibility of off-site lands for harvesting.</p> <p>Potential indirect impacts to cultural knowledge transfer driven by changes to availability and accessibility of off-site lands.</p> <p>Cumulative impacts on social, economic and health conditions related to the combined past, present and future impacts of Bruce Power’s operations, operations of the Project, other operations at the Bruce Power site (OPG, CNL and Hydro One), and other local and regional projects.</p>
<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; • Final commissioning activities; and • Training of commissioning and operations staff. • Operations and maintenance activities during power operations and outages may include: • 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.</p> <p>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.</p> <p>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 environmental stressors, and climate change.</p> <p>Potential direct and indirect impacts related to radiological releases to the environment.</p>	<p>Changes to perception of risk and feelings of personal security and wellbeing related to the presence of a nuclear facility in proximity to Indigenous Communities.</p> <p>Potential effects of influx of nuclear workers and suppliers on demand and cost of services such as health care, emergency response, childcare, and to the availability and affordability of local housing.</p> <p>Potential for increased availability of training, employment, and procurement opportunities.</p> <p>Potential direct and indirect impacts to health and well-being related to economic conditions.</p> <p>Potential for improved economic conditions related to economic participation in the Project.</p> <p>Potential for Increase in the production of medical isotopes may enhance economic benefit and availability and application of nuclear medicine locally or regionally.</p> <p>Potential indirect impacts to food security driven by changes to availability and accessibility of off-site lands for harvesting.</p> <p>Potential indirect impacts to cultural knowledge transfer driven by changes to availability and accessibility of off-site lands.</p>

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Factor/Project Phase	List of Activities, Infrastructure, Permanent or Temporary Structures and Physical Works	Section 21.0 Potential impacts to Indigenous Peoples: Physical and cultural heritage, traditional land use, historical archaeological and paleontological and architectural resources	Section 22.0 Potential impacts to Indigenous Peoples: Social, Economic and Health Conditions
	<ul style="list-style-type: none"> Site Support Systems; and Workers, Payroll and Purchasing. <p>Safe storage operations activities may include:</p> <ul style="list-style-type: none"> De-fueling of the reactors; and Activities required to maintain support systems and infrastructure (e.g., electrical power systems, lighting, etc.). 		<p>Cumulative impacts on social, economic and health conditions related to the combined past, present and future impacts of Bruce Power's operations, operations of the Project, other operations at the Bruce Power site (OPG, CNL and Hydro One), and other local and regional projects.</p>
Decommissioning	<p>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.</p> <p>Potential direct and indirect impacts related to the 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 environmental stressors, and climate change.</p>	<p>Changes to perception of risk and feelings of personal security and wellbeing related to the presence of a nuclear facility in proximity to Indigenous Communities.</p> <p>Potential effects of influx of nuclear workers and suppliers on demand and cost of services such as health care, emergency response, childcare, and to the availability and affordability of local housing.</p> <p>Changes in the availability of training, employment, and procurement opportunities.</p> <p>Changes to health and well-being related to economic conditions.</p> <p>Changes to economic conditions related to economic participation in the Project.</p> <p>Potential indirect impacts to food security driven by changes to availability and accessibility of off-site lands for harvesting.</p> <p>Potential indirect impacts to cultural knowledge transfer driven by changes to availability and accessibility of off-site lands.</p> <p>Cumulative impacts on social, economic and health conditions related to the combined past, present and future impacts of Bruce Power's operations, operations of the Project, other operations at the Bruce Power site (OPG, CNL and Hydro One), and other local and regional projects.</p>
Abandonment	<p>Abandonment activities may include:</p> <ul style="list-style-type: none"> Restoration of the site. 	<p>Potential direct and indirect impacts to fish and fish habitat, aquatic invertebrate, plant and nearshore wetland health related to cessation of activities on site; 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 cessation of activities on site; potential for positive impact related to restoration activities and cessation of high intensity of human activity on site.</p> <p>Potential direct and indirect impacts related to the 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 environmental stressors, and climate change.</p>	<p>Potential changes to perception of risk and feelings of personal security and wellbeing related to the presence of a nuclear facility in proximity to Indigenous Communities.</p> <p>Potential changes to the cost and demand for services such as health care, emergency response, childcare, and to the availability and affordability of local housing.</p> <p>Changes in the availability of training, employment, and procurement opportunities.</p> <p>Changes to health and well-being related to economic conditions.</p> <p>Changes to economic conditions related to economic participation in the Project.</p>

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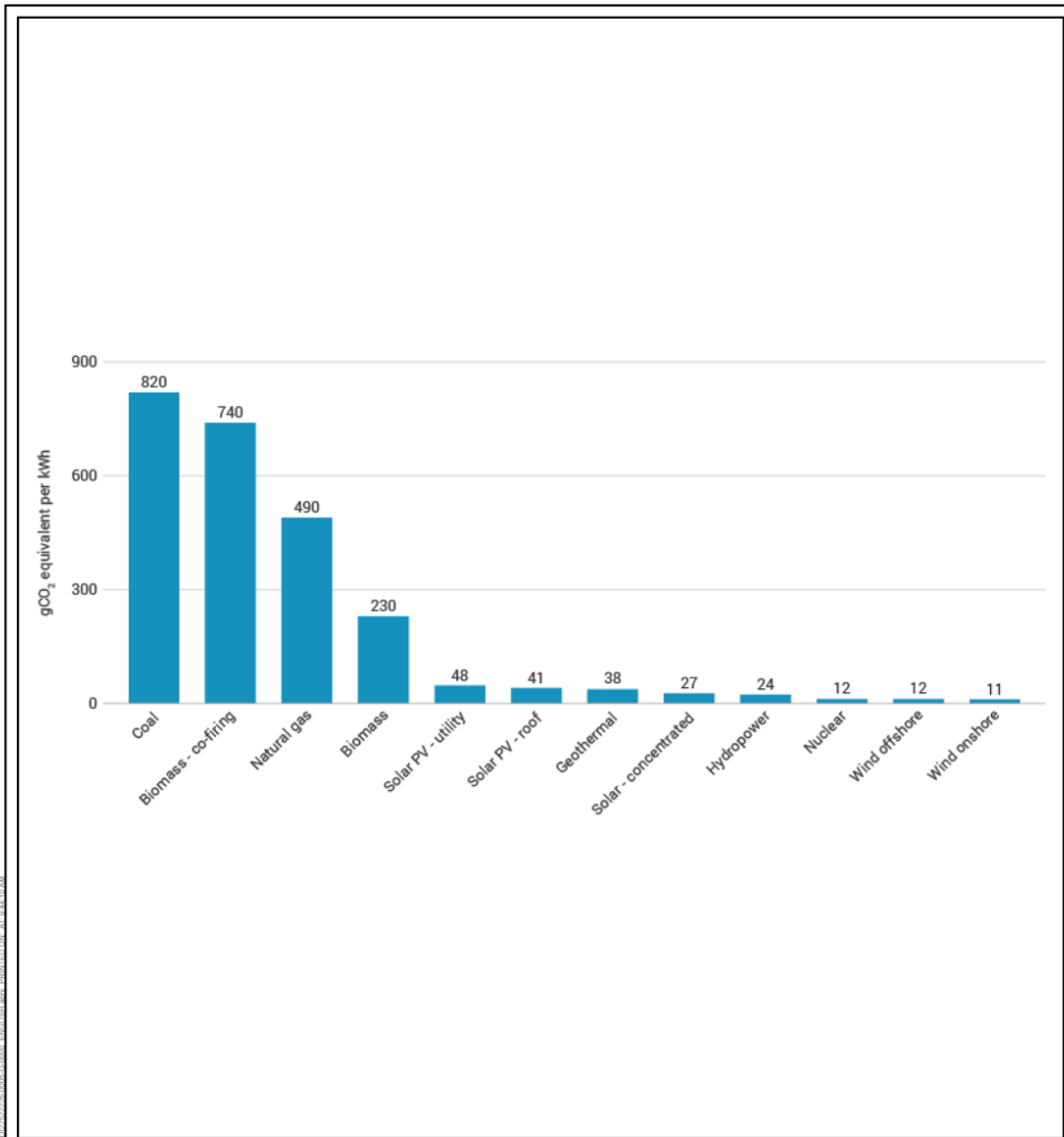
Factor/Project Phase	List of Activities, Infrastructure, Permanent or Temporary Structures and Physical Works	Section 21.0 Potential impacts to Indigenous Peoples: Physical and cultural heritage, traditional land use, historical archaeological and paleontological and architectural resources	Section 22.0 Potential impacts to Indigenous Peoples: Social, Economic and Health Conditions
			<p>Potential indirect impacts to food security driven by changes to availability and accessibility of off-site lands for harvesting.</p> <p>Potential indirect impacts to cultural knowledge transfer driven by changes to availability and accessibility of off-site lands.</p> <p>Cumulative impacts on social, economic and health conditions related to the combined past, present and future impacts of Bruce Power's operations, operations of the Project, other operations at the Bruce Power site (OPG, CNL and Hydro One), and other local and regional projects.</p>

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23.0 AN ESTIMATE OF ANY GREENHOUSE GAS EMISSIONS ASSOCIATED WITH THE PROJECT

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.

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LEGEND

CLIENT
BRUCE POWER



PROJECT
BRUCE C

TITLE
AVERAGE LIFE-CYCLE CO₂ EQUIVALENT EMISSIONS [R-104]

CONSULTANT



YYYY-MM-DD 2024-07-18

DESIGNED ----

PREPARED RRD

REVIEWED BT

APPROVED CS

REFERENCE(S)

[R-104] CARBON DIOXIDE EMISSIONS FROM ELECTRICITY [INTERNET]. AVAILABLE FROM: [HTTPS://WORLD-NUCLEAR.ORG/INFORMATION-LIBRARY/ENERGY-AND-THE-ENVIRONMENT/ CARBON-DIOXIDE-EMISSIONS-FROM-ELECTRICITY](https://world-nuclear.org/information-library/energy-and-the-environment/carbon-dioxide-emissions-from-electricity)

PROJECT NO.
22522226

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FIGURE
15

Figure 15: Average Life-Cycle CO₂ Equivalent Emissions [R-95]

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An estimate of the greenhouse gas emissions (GHG) associated with the Project is included within Table 8 and Table 9. The GHG emissions for the Project were estimated using methodology consistent with the *Strategic Assessment of Climate Change (SACC)* developed by ECCC [R-41]. Direct scope 1 and 2 emissions have been included in this assessment relating to the following project phases:

- Site preparation and construction; and
- Operation and maintenance.

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.

Due to the limited construction details and construction schedule at this time, site preparation, and construction/construction emissions estimates during the 2008 Bruce New Nuclear Power Plant Project Environmental Assessment Methods, Project Description, and Existing Environment Environmental Impact Statement [R-24] have been used as a conservative approach. It has been assumed the reactors will have similar site preparation, and construction activities, as well as use similar equipment. As such, the emissions associated with construction have been assumed to be the same on an annual basis. Estimated site preparation and construction emissions are provided in Table 8 below. Site preparation and construction phase emissions should be revisited and updated (if required) once more construction phase details are known (e.g., schedule, types and number of equipment, types of land to be cleared).

Table 8: Estimated GHG Emissions from Land Preparation and Construction Activities

Phase	Estimated GHG Emissions (kt CO ₂ e)	
	Annual Estimated Emissions	Total Estimated Emissions (Project Phase)
Site Preparation (3 Years)	79.75	239.25
Construction and Commissioning (14 years)	79.44	1,112.16

Note: Annual estimated GHG emissions from site preparation and construction phases have been taken from the Bruce New Nuclear Power Plant Project Environmental Assessment Methods, Project Description, and Existing Environment Environmental Impact Statement [R-24] as sufficient project information is not available to provide reasonable estimates. Annual source emissions have then been extrapolated based on project schedule.

CO₂ emissions from land-use change include the annual carbon sink loss and the one-time loss of carbon from land clearing activities. Due to the limited land use category data at this time (i.e., the type of land cover being disturbed by the project), emissions associated with land disturbance activities could not be estimated with the available project information at this time. However, emissions associated with land disturbance activities will be estimated once more accurate land category data is known. The land disturbance emissions will be calculated using the method described in 2006 IPCC Volume 4, Chapter 2 [R-96]. The calculation of the

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total carbon stored annually, and therefore lost with the removal of vegetation, will be calculated based on Equation 2.9 and Equation 2.10 (Tier 1) in Section 2.3.1.1.A of the 2006 IPCC Volume 4, Chapter 2 [R-96]. CH₄ from annual sink loss will be calculated using Equation 7.12 from Chapter 7 of the IPCC 2019 Refinement to the 2006 IPCC Guidelines for National GHG Inventories [R-97]. This calculation methodology is consistent with methodology provided in the IPCC 2019 Refinement to the 2006 IPCC Guidelines for National GHG Inventories [R-97] and the Draft Technical Guide Related to the Strategic Assessment of Climate Change (SACC) [R-98].

GHG emissions associated with the operations and maintenance phase have been estimated for the project. Yearly operation emissions and total operation emissions over the minimum 60-year operational lifespan have been estimated in Table 9 below. Due to the lack of information relating to the operation and maintenance of the proposed reactors at this time, emissions have been estimated using the existing facility emission intensity value (MW / kt CO₂e). For the purpose of this assessment, it has been assumed that the operations and maintenance for the proposed reactors will perform at the same level or better than existing reactors based on newer technology. As a result, it has been assumed operation and maintenance emission intensity per megawatt (output capacity) will be similar.

Emission intensity of the existing operations has been calculated using the existing operation emissions from the Bruce Power Annual Greenhouse Gas Annual Inventory data. The operations emissions from 2022 year were used and have been selected as a base year for calculating existing facility emission intensity. An existing output capacity of 6,550 MWe was used for the estimation. Since existing facility buildings such as visitor centers, safety buildings, and tech buildings are not expected to be built as part of this proposed Project, emissions associated with these types of facilities were excluded from the estimation. In addition, carbon credits and emission subsidies purchased by Bruce Power have not been included in the below estimate.

Table 9: Estimated GHG Emissions from Operation and Maintenance

Source	Greenhouse Gas Emissions
Estimated Yearly Emissions	17.0 kt CO ₂ e/yr
Minimum Estimated Total Operation Emissions (over 60 years)	1020 kt CO ₂ e
Maximum Estimated Total Operation Emissions (over 100 years)	1700 kt CO ₂ e/yr

Note: Operation and maintenance annual emissions have been assumed to be the same over the operational life of the project.

Operation emissions estimated below should be updated once more detailed operation inputs and expected activities are known.

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In addition to commitments described above related to GHG emissions, Bruce Power is engaging with SON, MNO and HSM to support climate change research that is relevant to each community. In 2018, Bruce Power announced its intent to carry out a Climate Change study in partnership with the CGLR from 2019-2021. The results of the study provided insight into the following issues:

- The state of climate change science in the Great Lakes Region;
- The impact of a changing climate on various ecosystems and sectors in the Great Lakes, including the region’s aquatic environment, fisheries, and Bruce Power’s operations;
- The knowledge and decision-making systems companies and communities need to better manage changing risks as a result of climate change; and
- The role that Bruce Power and other sectors might play in tackling climate change on a local and regional level, and how companies can adjust their corporate sustainability strategies to limit their impact.

Following a set of workshops and a literature review with researchers from the University of Toronto, a draft risk assessment summary, titled “Climate Risk Assessment for Indigenous Communities in Grey, Bruce and Huron Counties” was completed by CRI [R-99] and distributed to the SON, MNO and HSM communities in Q4 of 2021 for their review. CGLR, CRI and Bruce Power held virtual engagement sessions in February 2022 with SON, MNO and HSM to present on the final reports and story maps, and to gather feedback from the communities on how they would like to use the results of the risk assessment going forward, so that additional support can be provided accordingly.

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.

Land:

Potential sources of waste in or on the land that may occur as a result of the Project may include:

- Hazardous waste (oils, chemicals, lighting lamps and ballasts – some of these are recycled);
- Recyclable waste (glass, plastic, metal, cardboard, paper, wood, batteries, and electronics);
- Organics and food wastes (compost);
- Radiological waste (low-, intermediate-, and high-level radiological waste); and

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- Landfill waste (for those items that are neither hazardous, recyclable, compostable, nor radiological).

Air:

Site Preparation and Construction:

- Oxides of Nitrogen (NO_x), Sulphur Dioxide (SO₂), Carbon Monoxide (CO), Volatile Organic Compounds VOCs, Suspended Particulate Matter (PM) Polycyclic Aromatic Hydrocarbons (PAHs);
- PM and PAHs associated with construction vehicles exhaust emissions and material handling; and
- Particulates and metal fumes from welding activities.

Operations:

Contaminants of Potential Concern (COPC) that may be emitted during operations may include:

- Oxides of Nitrogen (NO_x);
- Sulphur Dioxide (SO₂);
- Suspended Particulate Matter (PM);
- Polycyclic Aromatic Hydrocarbons (PAHs);
 - (PM and PAHs associated exhaust emissions from vehicle traffic and stationary emergency equipment);
- Carbon dioxide (CO₂);
- Hydrazine;
- Morpholine;
- Ammonia; and
- Radiological emissions (specific radionuclides/radionuclide groups dependent upon technology selection).

Decommissioning:

- Oxides of Nitrogen (NO_x), Sulphur Dioxide (SO₂), Carbon Monoxide (CO), VOCs, PM and PAHs associated with construction vehicles exhaust emissions and material handling; and
- Radiological emissions (specific radionuclides/radionuclide groups dependent upon technology selection).

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION**Water:**

Site Preparation and Construction:

- Contaminants including Total suspended solids (TSS) and turbidity would be controlled and/or mitigated according to regulatory approvals;
- Contaminants (e.g., fuels or oils) released to the terrestrial or aquatic environments through accident or malfunction; and
- Atmospheric deposition of airborne COPCs during site preparation and construction.

Operations:

- Heat, morpholine and hydrazine controlled and mitigated according to regulatory approvals;
- Contaminants (e.g., fuels or oils) released to the terrestrial or aquatic environments through accident or malfunction atmospheric deposition of airborne COPCs during operations;
- Use of water from Lake Huron in accordance with regulatory approvals;
- Increase in treated wastewater entering the environment, subject to regulatory approvals; and
- Radiological effluents (specific radionuclides / radionuclide groups dependent upon technology selection).

Decommissioning:

- Contaminants including TSS controlled and/or mitigated according to regulatory approvals;
- Contaminants (e.g., fuels or oils) released to the terrestrial or aquatic environments through accident or malfunction; and
- Radiological effluents (specific radionuclides / radionuclide groups dependent upon technology selection).

25.0 PART F: SUMMARY

A plain-language summary of the information that is required under items 1 to 24 in English and in French has been provided separately by Bruce Power.

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BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

APPENDIX A: LEGAL LAND DESCRIPTION

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

**SCHEDULE 2.1
LEASED PREMISES**

A. OPG-HURON A INC. LANDS**FIRSTLY****PIN 33285-0060 (LT)**

Part of Lots 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 and 30, Concession Lake Range or Concession A Bruce; part of the Original Road Allowance along the Shore of Lake Huron established by Municipal Survey 826, registered as Plan 475 (closed by By-Law 811 registered as Instrument No. R28696 and closed by By-Law 78-18 registered as Instrument No. R168541); and part of the Original Road Allowance between Lots 20 and 21 Concession Lake Range or Concession A Bruce, all designated as **Parts 31, 37 to 63 both inclusive, 73, 89, 91 to 95 both inclusive, and 121 to 127 both inclusive** on **Reference Plan 3R-7352**, Municipality of Kincardine, in the County of Bruce.

SECONDLY**PART OF PIN 33285-0165 (LT)**

Part of the Bed of Lake Huron in front of Lots 24, 25, 26, 27, 28, 29 and 30, Concession Lake Range or Concession A Bruce; designated as **Parts 108 to 110**, both inclusive, on **Reference Plan 3R-7352**, Municipality of Kincardine, in the County of Bruce.

B. OPG-HURON B INC. LANDS**FIRSTLY****PART OF PIN 33285-0176 (LT)**

Part of Lots 11, 12, 13, 14, 15, 16 and 17, Concession Lake Range or Concession A Bruce; Part of the Original Road Allowance along the Shore of Lake Huron established by Municipal Survey 826, Registered as Plan 475 (closed by By-Law 811 registered as Instrument No. 28696); Part of Lot 1 on the west side of Bruce Street, part of Lot 1 on the east side of Head Street, part of Lot 1 on the west side of Head Street, part of Lot 1 on the east side of Raglan Street, part of Lot 1 on the west side of Raglan Street, part of Lot 1 on the east side of Morin Street, part of Lot 1 on the west side of Morin Street, part of Lot 1 on the east side of Russell Street and part of Bruce Street and Head Street (closed by Bylaw No. 1752 registered as Instrument Nos. 34839/ 34840), part of Raglan Street and Morin Street (closed by Bylaw No. 810 registered as Instrument No. 27556) and part of McNabb Street (closed by Bylaw No. 7711 registered as Instrument No. 154872), all in the Townplot of Inverhuron (Crown Survey VI) designated as **Parts 4 to 9 both inclusive, 11, 12, 13, 15, 16 and 18 to 27 both inclusive**, on **Reference Plan 3R7351** and **Part 1 on Reference Plan 3R-7355**, Municipality of Kincardine, in the County of Bruce.

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

SECONDLY [Part of Inverhuron Park]**PART OF PIN 33285-0176 (LT)**

Part of Lots 1, 2, 3, 4, 5 and 6 on the east side of Ontario Street, Lots 1, 2, 3, 4, 5, 6 and 7 on the west side of Ontario Street, Lots 1, 2, 3, 4, 5, 6, 7, 8 and 9 on the east side of Sir Colin Street, Lots 1, 2, 3, 4, 5, 6, 7, 8 and 9 on the west side of Sir Colin Street, Lots 1, 2, 3, 4, 5, 6, 7, 8 and 9 on the east side of William Street, Lots 1, 2, 3, 4, 5, 6, 7, 8 and 9 on the west side of William Street, part of Lake Street and Napier Street (closed by Bylaw No. 810 registered as Instrument No. 27556), part of McNabb Street (closed by Bylaw No. 7711 registered as Instrument No. 154872) and all of William Street, Sir Colin Street and Ontario Street (closed by Bylaw No. 810 registered as Instrument No. 27556), all in the Townplot of Inverhuron (Crown Survey No. VI) designated as Part 10 on Reference Plan 3R 7351, Municipality of Kincardine, in the County of Bruce.

THIRDLY**PIN 33285-0191 (LT)**

Parcel Water Lot 3, Section Location HY 152 being that part of the Bed of Lake Huron in front of Lots 11, 12, 13, 14, 15, 16 and 17, Concession A Bruce or Lake Range, designated as **Part 17 on Reference Plan 3R-7351**, Municipality of Kincardine, in the County of Bruce.

C. OPG-HURON COMMON FACILITIES INC. LANDS**FIRSTLY****PIN 33286-0210 (LT)**

Part of Lots 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 and 21, Concession Lake Range or Concession A Bruce; and part of the Original Road Allowance between Lots 20 and 21 (closed by By-Law 79-1 registered as Instrument No. R170321) Lake Range Kincardine designated as **Parts 2, 3 and 4 on Reference Plan 3R-7015**, Municipality of Kincardine, in the County of Bruce.

PIN 33286-0050(LT)

Part of Lots 21 and 22, Concession A or Lake Range Bruce designated as **Part 1 on Reference Plan 3R-7015**, Municipality of Kincardine, in the County of Bruce.

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

SECONDLY**PART OF PIN 33285-0170 (LT)**

Part of Lots 15, 16, 17, 18, 19, 20, 21, 22, 23 and 24, Concession Lake Range or Concession A Bruce, and part of the Original Road Allowance between Lots 20 and 21 (closed by By-Law 811), Concession Lake Range or Concession A Bruce, part of the Original Road Allowance along the Shore of Lake Huron established by Municipal Survey 826, Registered as Plan 475 (closed by By-Law 811 registered as R28696) and part of bed of Lake Huron in front of Lots 17, 18 and 19, Concession A Bruce being Water Lot Location HY-45, all designated as **Parts 1 to 5 both inclusive, 7 to 11 both inclusive, 13 to 20 both inclusive, 27, 28, 66, 67, 71, 79, 80, 84, 85, 87, 88, 90, 112 to 120 both inclusive**, on **Reference Plan 3R-7352** and **Parts 1 and 2 on Reference Plan 3R-8208**. Municipality of Kincardine, in the County of Bruce.

THIRDLY**PART OF PIN 33285-0166 (LT)**

Part of Parcel Water Lot-1, Section Location HY149, being composed of part of the Bed of Lake Huron in front of Lots 19, 20, 21, 22, 23 and 24, Concession A or in front of part of the Original Road Allowance between Lots 20 and 21, Concession A or Lake Range designated as **Parts 96, 98 and 106 on Reference Plan 3R-7352**. Municipality of Kincardine, in the County of Bruce.

LEASED PREMISES - COMMON FACILITIES**FOURTHLY****PIN 33286-0022 (LT)**

Part of Lots A, B, C, D and E, Concession 4, designated as **Parts 1, 2 and 3 on Reference Plan 3R-7019**, Municipality of Kincardine, in the County of Bruce.

INFORMATION CENTRE**PIN 33286-0019 (LT)**

Part of Lots C and D, Concession 5, Bruce, designated as Part 1 on Reference Plan 3R-7348 and **Part 4 on Reference Plan 3R-379**. Municipality of Kincardine, in the County of Bruce.

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

APPENDIX B: PRELIMINARY LIST OF PERMITS AND APPROVALS

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

Jurisdiction	Regulator	Legislation	Regulation	Permit Name	Permit Requirement/Considerations
Federal	Impact Assessment Agency of Canada (IAAC)	<i>Impact Assessment Act (IAA)</i>	--	Decision Statement	Integrated Federal Process
Federal	Canadian Nuclear Safety Commission (CNSC)	<i>Nuclear Safety and Control Act (NSCA)</i>	<i>REGDOC-1.1.1, Site Evaluation and Site Preparation for New Reactor Facilities</i>	Licence to Prepare Site (LTPS)	Integrated Federal Process
Federal	Canadian Nuclear Safety Commission (CNSC)	<i>Nuclear Safety and Control Act (NSCA)</i>	<i>REGDOC-1.1.2, Licence Application Guide: Licence to Construct a Reactor Facility</i>	Licence to Construct (LTC)	
Federal	Canadian Nuclear Safety Commission (CNSC)	<i>Nuclear Safety and Control Act (NSCA)</i>	<i>REGDOC-1.1.3, Licence Application Guide: Licence to Operate a Nuclear Power Plant</i>	Licence to Operate (LTO)	
Federal	Canadian Nuclear Safety Commission (CNSC)	<i>Nuclear Safety and Control Act (NSCA)</i>	<i>REGDOC-1.1.4, Licence Application Guide: Licence to Decommission Reactor Facilities (not yet developed)</i>	Licence to Decommission (LTD)	
Federal	Fisheries and Oceans Canada (DFO)	<i>Fisheries Act</i>	<i>Authorizations Concerning Fish and Fish Habitat Protection Regulations</i>	Fisheries Act Authorization (FAA)	<p><i>Fisheries Act paragraph 34.4(2)(b) Authorization is required if the Project is likely to result in the death of fish.</i></p> <p><i>Fisheries Act paragraph 35(2)(b) Authorization is required if the Project is likely to cause the harmful alteration, disruption or destruction to fish habitat.</i></p> <p>A DFO project Request for Review (RfR) is required. A Fisheries Act Authorization is potentially required depending on the outcome of the DFO project review.</p> <p>DFO's review will determine whether impacts can be effectively mitigated or avoided. If not, a Fisheries Act Authorization may be required.</p>
Federal	Fisheries and Oceans Canada (DFO)	<i>Species at Risk Act (SARA)</i>	<i>Permits Authorizing an Activity Affecting Listed Wildlife Species Regulations</i>	SARA Permits (for aquatic species), can be issued as part of a Fisheries Act Authorization	<p>Approval from Fisheries and Oceans Canada is required to undertake an activity that affects an aquatic species at risk in a way that is prohibited by SARA.</p> <p>Approval from Fisheries and Oceans Canada is required to undertake an activity that affects a Species at Risk Act (SARA) prohibited aquatic species, such as:</p> <ul style="list-style-type: none"> • Fish; • Shellfish; • Crustaceans; • Marine animals; and • Marine plants. <p>Request for review is required if the project may result in the:</p> <ul style="list-style-type: none"> • Death, harm, harassment, capture or taking possession, collection, purchase, sale or trade of an individual (or any part or derivative of such an individual) of an aquatic species at risk; • Damage or destruction of the residence of an aquatic species at risk; and • The destruction of any part of the critical habitat of an aquatic species at risk.

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

Jurisdiction	Regulator	Legislation	Regulation	Permit Name	Permit Requirement/Considerations
Federal	Environment and Climate Change Canada (ECCC)	<i>Species at Risk Act (SARA)</i>	<i>Permits Authorizing an Activity Affecting Listed Wildlife Species Regulations</i>	SARA Permits (for non-aquatic species)	Under section 73 of the SARA, the Minister of Environment and Climate Change Canada may grant permits authorizing an activity affecting a listed wildlife species (under Schedule 1 of SARA) or any part of its residence or critical habitat that would otherwise be prohibited. Where the proponent determines that a listed wildlife species or any part of its residence or critical habitat would be affected by the project activities, it should consult directly with the Canadian Wildlife Service as early as possible in the process.
Federal	Environment and Climate Change Canada (ECCC)	<i>Migratory Birds Convention Act, 1994 (MBCA)</i>	<i>Migratory Birds Regulations, 2022 (MBR, 2022)</i>	Damage or Danger Permits <ul style="list-style-type: none"> Federal Scaring Permits Federal Killing Permits Permit to Destroy Eggs and Nests Relocation Permits for Migratory Birds, Eggs and Nests 	Damage or danger permits are issued under subparagraphs 12(1)(b)(i-iii) of the MBR, 2022 in accordance with MBR, 2022 sections 65, 70 and 71. The damage or danger permit authorizes applicants to scare migratory birds, destroy eggs or nests, relocate birds or their nests, or kill birds in instances where the birds, nests, or eggs are causing damage or danger. All damage or danger permits may only be issued if the bird is causing danger to human health or public safety or damage to the use of land or agricultural interest. Damage or danger permits may only be issued to a person who owns, manages or leases the land on which the bird is causing damage or danger or who holds an easement, servitude, right-of-way, licence of occupation, or holds rights under provincial laws to use that land for public utilities or infrastructure.
Federal	Transport Canada	<i>Canadian Navigable Waters Act (1985)</i>		Application for Approval	Work (project) that affects navigation requires an application for an approval to the Navigation Protection Program (NPP). The exception is when your project is considered a “minor work” and meets criteria set in the <i>Minor Works Order</i> . Owners of major works that may interfere with navigation are required to apply to TC.
Federal	Environment and Climate Change Canada (ECCC)	<i>Canadian Environmental Protection Act, 1999 (CEPA)</i>	<i>Cross-border Movement of Hazardous Waste and Hazardous Recyclable Material Regulations</i>	Transboundary permits: hazardous waste and recyclable material <ul style="list-style-type: none"> Import Permit Export Permit Permit for Export from and Import to Canada Following Transit Through a Foreign Country Permit for Transit Through Canada Permit for Return to Canada Permit for Return to Foreign Country of Origin 	Required by anyone who intends to transport across an international border hazardous waste destined for final disposal or hazardous recyclable material, which is destined for recovery (that is, recycling). Section 187 of the CEPA requires the publication of certain information provided on notices received for proposed imports, exports and transits of hazardous wastes. This information comprises: the name or characteristics of the waste or recyclable material; the name of the Canadian importer, exporter or, for transits, the name of the carrier; and the country of origin or destination, and in the case of transits both.
Federal	Transport Canada	<i>Transportation of Dangerous Goods Act (TDGA)</i>		Authorization under Transportation of Dangerous Goods Act	Required for transportation of new fuel bundles and assemblies to the site, and transportation of used fuel off-site. Under section 2 of the TDGA, the Minister of Transportation, or a person designated by the Minister, may issue a permit exempting the transportation of dangerous goods in a means of transport from the application of the TDGA, and the TDGA does not apply to dangerous goods that are being transported in compliance with the permit.

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

Jurisdiction	Regulator	Legislation	Regulation	Permit Name	Permit Requirement/Considerations
Federal	Global Affairs Canada	<i>Export and Import Permits Act (EIPA)</i>		Export and Import Permits	Export and import permits are issued under the authority of the EIPA. The Act authorizes the government to control the import and export of certain goods as defined in various intergovernmental arrangements, as well as the export of natural resources and other goods for the purpose of ensuring both adequate supply for and the security of Canada.
Federal	Transport Canada	<i>Aeronautics Act</i>	<i>Canadian Aviation Regulations</i>	Aeronautical Assessment Form Obstruction Marking and Lighting	In accordance with the Canadian Aviation Regulations Standard 621, an Aeronautical Assessment Form for Obstruction Marking and Lighting may be required to be submitted to Transport Canada, to determine the need for the application of marking and lighting of objects that may pose a hazard to aviation.
Federal	NAV Canada	<i>Aeronautics Act</i>		Land Use Submission Form	May be required to submit a Land Use Submission Form to NAV Canada prior to construction.
Federal	Natural Resources Canada	<i>Explosives Act</i>		Explosives Permits	Required manufacturing, buying, selling, storing, importing, exporting or transporting of explosives, including industrial explosives, rocket motors and special purpose explosives such as flares or reactive targets
Provincial	Ministry of the Environment, Conservation and Parks (MECP)	<i>Environmental Protection Act, 1990 (EPA)</i>	<i>O. Reg. 406/19: ON-SITE AND EXCESS SOIL MANAGEMENT</i>	File a notice in the Excess Soil Registry, and complete specified assessments and reports, such as: <ul style="list-style-type: none"> • Assessment of past uses • Sampling and analysis plan • Soil characterization report • Excess soil destination assessment report 	The excess soil reuse planning requirements apply to the following types of projects which are, generally, larger in scale or more likely to generate excess soil with some contaminants: <ul style="list-style-type: none"> • Projects generating 2000 m³ or more of excess soil and that are in a settlement area (such as cities and towns); This trigger does not apply to projects in rural areas, or where all of the project area is currently, or was most currently, used for agricultural or other, parkland, institutional or residential use (as described in Ontario Regulation 153/04). • Projects for which part of the project area has a past or present use that is an “enhanced investigation project area” as defined in the regulation (for example, gas station, garage, used for the operation of dry-cleaning equipment, or industrial use). This trigger does not apply to a situation where a Record of Site Condition (RSC) has been filed and where there was no risk assessment completed in respect of the project area, and where no part of the project area has been used as an enhanced investigation project area since the filing of the RSC. • Project areas that are being remediated by excavating and removing excess soil in order to reduce the concentration of contaminants, including for the purposes of filing an RSC.
Provincial	Ministry of the Environment, Conservation and Parks (MECP)	<i>Ontario Water Resources Act</i>	<i>O.Reg. 387/04: Water Taking and Transfer</i>	Permit to Take Water (PTTW)	Required for taking more than 50,000 litres of water per day from the environment.

BRUCE C PROJECT – INITIAL PROJECT DESCRIPTION

Jurisdiction	Regulator	Legislation	Regulation	Permit Name	Permit Requirement/Considerations
Provincial	Ministry of the Environment, Conservation and Parks (MECP)	<i>Endangered Species Act, 2007 (ESA)</i>	<ul style="list-style-type: none"> O. Reg. 242/08: GENERAL O. Reg. 830/21: EXEMPTIONS - SPECIES SUBJECT TO SPECIES CONSERVATION CHARGES (Exemptions – Bobolink, Eastern Meadowlark and Butternut) 	ESA Authorization ESA Permits: <ul style="list-style-type: none"> health or safety permits protection or recovery permits overall benefit permits social or economic benefit to Ontario permits Aboriginal community permits ESA Agreements: <ul style="list-style-type: none"> stewardship agreements landscape agreements Aboriginal community agreements 	Section 9 of the <i>Endangered Species Act, 2007 (ESA)</i> prohibits: <ul style="list-style-type: none"> Killing, harming, harassing, capturing and taking living members of species listed as endangered, threatened or extirpated on the Species at Risk in Ontario list; The possession, transportation, collection, buying, selling, leasing, trading or offering to buy, sell, lease or trade living or dead members of species that are listed on the Species at Risk in Ontario List, or something that is represented to be a member of a species listed on the Species at Risk in Ontario List; The possession, transportation, collection, buying, selling, leasing, trading of anything derived from a living or dead member of a species listed on the Species at Risk in Ontario list; and Damaging or destroying the habitat of species that are listed as endangered or threatened on the Species at Risk in Ontario list.
Provincial	Ministry of the Environment, Conservation and Parks (MECP)	<i>Environmental Protection Act, 1990 (EPA)</i>		Environmental Compliance Approval (ECA) <ul style="list-style-type: none"> Noise 	EPA section 9 (activities that may discharge, or from which may be discharged, a contaminant into the natural environment other than water, which includes most industrial processes or modifications to industrial processes and equipment).
Provincial	Ministry of the Environment, Conservation and Parks (MECP)	<i>Environmental Protection Act, 1990 (EPA)</i>	<i>O.Reg. 419/05 - AIR POLLUTION - LOCAL AIR QUALITY</i>	Environmental Compliance Approval (ECA) <ul style="list-style-type: none"> Air Quality 	EPA section 9 (activities that may discharge, or from which may be discharged, a contaminant into the natural environment other than water, which includes most industrial processes or modifications to industrial processes and equipment).
Provincial	Ministry of the Environment, Conservation and Parks (MECP)	<i>Environmental Protection Act, 1990 (EPA)</i>		Environmental Compliance Approval (ECA) <ul style="list-style-type: none"> Sewage 	OWRA section 53 (sewage works), including stormwater management.
Provincial	Ministry of the Environment, Conservation and Parks (MECP)	<i>Ontario Water Resources Act</i>	<i>O.Reg. 387/04: Water Taking and Transfer</i>	Permit to Take Water (PTTW)	Required for taking more than 50,000 litres of water per day from the environment.
Provincial	Ministry of Natural Resources and Forestry (MNRF)	<i>Fish and Wildlife Conservation Act, 1997</i>			Part II outlines general restrictions pertaining to wildlife capture, killing and possession. Section 7 prohibits the destruction of nests or eggs of birds not protected by the MBCA. Section 8 prohibits the disturbance or destruction of furbearing mammal dens and beaver dams without licence.
Provincial	Ministry of Natural Resources and Forestry (MNRF)	<i>Public Lands Act</i>		Crown Land Work Permit	Required if construction activities on Crown Land (including lakebed).
Provincial	Ministry of Citizenship and Multiculturalism (MCM)	<i>Ontario Heritage Act</i>		Archaeological Report Review	Required to be in compliance with Standards and Guidelines for Consultant Archaeologists (2011) per <i>Ontario Act, Part VI</i> .