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Oral Presentation

Submission from the Métis Nation of Ontario

In the Matter of

Bruce Power Inc. – Bruce A and B Nuclear Generating Station

Request for a ten-year renewal of its Nuclear Power Reactor Operating Licence for the Bruce A and B Nuclear Generating Station

Commission Public Hearing – Part 2

May 28-31, 2018

Exposé oral

Mémoire de la Nation métisse de l'Ontario

À l'égard de

Bruce Power Inc. - Centrale nucléaire de Bruce A et Bruce B

Demande de renouvellement, pour une période de dix ans, de son permis d'exploitation d'un réacteur nucléaire de puissance à la centrale nucléaire de Bruce A et Bruce B

Audience publique de la Commission – Partie 2

28-31 mai 2018

Canada

Métis Nation of Ontario
Lands, Resources and Consultations

April 16, 2018

Louise Levert
Secretariat
Canadian Nuclear Safety Commission
280 Slater St., P.O. Box 1046
Ottawa, Ontario K1P 5S9

BY ELECTRONIC MAIL

Dear Ms. Levert:

Re: Written Submission from the Métis Nation of Ontario in the Matter of the Application to Renew the Power Reactor Operating licence for the Bruce A and B Nuclear Generating Stations

I am writing on behalf of the Métis Nation of Ontario (MNO) (including the Moon River Métis Council, Georgian Bay Métis Council and Great Lakes Métis Council collectively known as the Georgian Bay Traditional Territory Consultation Committee or the "GBTTCC"). Please accept this letter as the Métis Nation of Ontario's (MNO) submission in respect of the Bruce A and Bruce B Re-Licencing Application (the Application) and the Canadian Nuclear Safety Commission's (CNSC) Commission Member Document.

As you know, the Métis are one of three distinct Aboriginal peoples in Canada, whose rights, interests and way of life are constitutionally protected under section 35 of the *Constitution Act, 1982*. The MNO has Aboriginal rights in the lands, waters and natural resources within the area where the Bruce Power Nuclear Generating Stations are located. These rights are held as collective rights by the regional rights-bearing Métis community defined as the Georgian Bay Traditional Harvesting Territory, as represented by the MNO. The Crown therefore has a duty to consult with the Métis before making a decision, taking an action, or issuing an approval that could impact such Aboriginal rights, interests or way of life.

The attached comments on the Re-Licencing Application were prepared by the MNO-retained consultant, MNP. Bruce Power was provided with an opportunity to comment on the MNO's draft document, and these comments are set out in the attached table. A number of the MNO's comments relate to the integration of Métis-specific information and Valued Components (VCs), as detailed in two MNO reports previously provided to the CNSC and Bruce Power: *Preliminary Métis-Specific Valued Components and Indicators* (October 2016) and *Métis Nation of Ontario Valued Components Monitoring Report* (June 2017).

The MNO and Bruce Power met on two occasions in early 2018 to discuss the MNO's comments on the Re-Licencing Application and the related recommendations. The MNO and Bruce Power have both committed to carrying out these recommendations.

If you have any questions or comments about any of the items raised herein or in the submission of the MNO, please do not hesitate to contact Ms. Bonnie Bartlett, Manager in the MNO's Lands, Resources and Consultations Branch of the MNO via email at BonnieB@metisnation.org or by telephone at 416.977.9881 etx. 106.

The MNO looks forward to your response.

Yours very truly,

Pauline Richardson
Chair, Georgian Bay Traditional Territory Consultation Committee
Region 7 Councillor – Provisional Council of the Métis Nation of Ontario

c.c.
M. Margaret Froh, President, Métis Nation of Ontario

Georgian Bay Traditional Territory Consultation Committee, Métis Nation of Ontario
Peter Coture, President, MNO Great Lakes Métis Council

David Dusome, President, MNO Georgian Bay Métis Council

Larry Duval, Senator, MNO Moon River Métis Council

Greg Garratt, Captain of the Hunt, MNO Region 7

Joanne Meyer, Chief Operating Officer, Métis Nation of Ontario

Aly N. Alibhai Director, Lands, Resources and Consultations Branch of the Métis Nation of Ontario

April 16, 2018

Bonnie Bartlett
Lands, Resources and Consultation Branch
Métis Nation of Ontario
311-75 Sherbourne St.
Toronto, ON M5A 2P9

RE: Métis Nation of Ontario Comments on Bruce Power -

(1) Application for Renewal of the Nuclear Power Reactor Operating Licence Bruce A and Bruce B
(2) Environmental Quantitative Risk Assessment
(3) Predictive Effects Assessment for the Continued Operations Including Major Component Replacement
(4) University Research Summary

Dear Ms. Bartlett,

As per our identified Scope of Work for Bruce Power - Bruce A and Bruce B Nuclear Power Reactor Operating Licence Renewal Application ("Licence Renewal" or "Application"), please find below an overview of the comments and a detailed table of issues. MNP was tasked with reviewing the Application on behalf of the Métis Nation of Ontario ("MNO") to specifically comment on how the Application considered effects to Metis rights and interests. An environmental consulting firm, PGL, was also sub-contracted to review the Application in relation to water and fisheries issues.

A draft of the comments was submitted to Bruce Power. Bruce Power and the MNO met on two occasions (February 27, 2018 and April 5, 2018) to discuss issues within the review; Bruce Power also provided additional information and written responses to MNO's draft comments.

The overarching issues that were raised with Bruce Power included:

- The Licence Renewal Documentation, including the above noted three volumes, lack assessment of effects to Métis-specific Valued Components. In particular, the MNO has identified Valued Components, with a variety of potential effects, measurable parameters and indicators of change associated with them in the MNO Valued Components Monitoring Report ("MNO VC Report"). Although Indigenous interests and concerns were discussed in numerous instances in the documentation, none of Environmental Risk Assessment ("ERA"), Predictive Effects Assessment ("PEA") or the Environmental Assessment Follow-up Monitoring Program Reports specifically incorporated and considered these MNO VCs and related comments. Bruce Power has referenced the MNO VC Report in the *"Bruce Power Indigenous Community Interests – Metis Nation of Ontario – Confidential*"; however, there is no mechanism in either ecological or human health risk assessments to assess the perceptive effects of the Project on MNO rights and interests.

- There are gaps in baseline data in both the ERA and PEA, which led to the exclusion of assessing the potential effects on the MNO VCs, including but not limited to reptiles, amphibians, COPCs (e.g. potassium) effects to aquatic environment, and terrestrial biota exposure to radionuclide (e.g. Carbon-14). Without filling these data gaps, and addressing the underlying uncertainties, the ERA and PEA cannot instil a sufficient level of confidence in predicting the Project impacts on Metis rights and interests.

- The ERA and PEA do not follow typical environmental impact assessment methodology[1]. This is an issue because there is no residual effect assessment and determination of significance and no discussion of potential mitigation measures is identified or applied. Furthermore, there is a lack of process in assessing cumulative effects; this is particularly notable in the case of thermal emissions coupled with rising lake temperatures, other thermal influences and nutrient loading on important aquatic life and habitats.

Based on the above outlines gaps, we recommended the following:

- Bruce Power should fill the data gaps and identify corresponding monitoring needs as the Project proceeds. Specifically, Bruce Power should undertake studies to characterize the sediment quality and surface water quality at and around the Site, further assess the COPCs (e.g. potassium) effects to aquatic environment, and terrestrial biota exposure to radionuclide (e.g. Carbon-14).

- Bruce Power should identify monitoring needs and apply mitigation measures in collaboration with the MNO to improve the fish entrainment and impingement for the species important to the MNO.

- The MNO is not currently involved in the emergency response plans. Bruce Power should develop collaboratively, with the MNO, a MNO Emergency communication and Management Plan, which provides formal notification protocol, emergency response and preparedness training programs.

- We would also suggest that the regulator consider doing a regional cumulative effects study which is effects-based and allows for questions of a broader nature related to ecological thresholds and synergistic effects. Instead of doing "one-off" and disconnected cumulative effects assessments for each individual project and focusing on localized stressors, for example, the cumulative impacts of thermal emission can be evaluated and managed by doing regional assessments. Further, this regional assessment can be undertaken in a collaborative fashion with the MNO enabled by an integration of traditional knowledge, science and evidence.

- As per the Bruce Power Indigenous Community Interests-MNO (*"MNO Interests Report"),* an actionable work plan/framework with regards to the MNO Annual Monitoring Program *("MNO AMP")* should be duly developed in collaboration with MNO.

The MNO and Bruce Power met on February 27, 2018 to discuss a preliminary set of comments and recommendations in relation to the re-licencing Application. The above recommendations were tabled with Bruce Power and there was broad agreement to move forward with actioning several recommendations and, specifically the following:

1. Co-development of a MNO Monitoring Program;
2. A MNO specific diet survey; and
3. A MNO Emergency Communication and Management Plan.

On April 5, 2018, the MNO and Bruce Power reviewed the recommendations and revised the necessary activities to support these commitments. Bruce Power and the MNO have developed some key ***preliminary tasks*** to action the recommendations. It is anticipated by both parties that actioning these recommendations will provide more information on effects to biophysical and socio-economic indicators predominately in relation to the Land, Water and Resources VC.

[1] Standard environmental impact assessment methodology as defined by EIS Guidelines under *Canadian Environmental Assessment Act, 2012* (CEAA, 2012) and *Noble, B. F. (2016). Introduction to environmental impact assessment: A guide to principles and practice*.

MNO Monitoring Program

MNO AMP tasks	Desired Outcome	Activity	Timeline
Understand existing CNSC IEMP, BP Environmental Monitoring Program	• Avoid overlapping monitoring activities and define where gaps exist between the MNO areas of interest and current monitoring programs	• Define current state of proponent and regulator monitoring • A working session between CNSC, BP and the MNO	Fall to winter 2018
Review and evaluate the MNO VCs and areas of concern to focus the MNO AMP	• Ensure all identified impacts to the MNO VCs and areas of interest have a corresponding monitoring plan to continue to understand the project effects	• The MNO to complete a workshop to refine key areas for consideration	Fall to winter 2018
Create an implementation plan for monitoring/oversight of areas of interests (as identified above)	• Ensuring a robust monitoring program is followed to understand effects to the MNO VCs and areas of interest	• Continue with annual VCs Citizen survey to add to the baseline, particularly in support of the perceptive aspects of the MNO VCs • Identify training and capacity needs for the MNO to implement new biophysical monitoring or participate in existing monitoring	TBD
Develop/identity program and train environmental monitors or oversight role for the MNO	• Provide confidence to the MNO Citizens that the monitoring results are accurate and/or have MNO oversight	• The MNO to identify hiring need • BP to provide required training and/or capacity for training	TBD
Identify adaptive management measures should predictions and mitigation measures prove to be incorrect or unanticipated effects occur	• Ensure that the MNO AMP is a living and robust program which provides efficient response to emergent situations	• BP to host regular/annual follow up meetings with the MNO representatives • BP and the MNO to identify responses and actions to results of monitoring program (e.g. education sessions/tours in response to perception issues)	Continuous

MNO Specific Diet Survey

MNO AMP tasks	Desired Outcome	Activity	Timeline
Co-designing a MNO-specific survey/study to understand any Project impacts on the MNO Citizens' health	• To ensure that a MNO-specific survey contains appropriate plant and animal species as well as accounts for unique Metis attributes (e.g. parts of animals consumed, preparation of traditional foods/medicines, etc. seasons)	• BP to host working sessions with the MNO representatives to develop a broader human health/diet survey • The MNO to draft survey, BP to review and provide feedback • BP to provide training/software for the MNO to conduct survey and analyze data	Fall to Winter 2018

Complete the MNO-specific data gathering	• Ensure appropriate selection of participants and delivery of survey in a manner appropriate to the MNO	• The MNO to identify participants and outreach protocol • The MNO to conduct in-person surveys or outreach to MNO participants to complete online surveys	TBD
Analyze survey results	• Ensure survey results are communicated as well as incorporated and assessed in the next ERA	• The MNO to analyze survey results • The MNO to provide results to BP • The MNO to present results to Citizens • BP to analyze a subset of the survey data (scope to be agreed to with the MNO) • BP to incorporate and assess the MNO-specific survey results in next ERA filing	TBD

MNO Emergency Communication and Management Plan

MNO AMP tasks	Desired Outcome	Activity	Timeline
Develop a notification protocol for emergency communications	• To ensure that the MNO representatives and Citizens receive information around any emergency or unplanned event in a timely manner	• BP and the MNO to host working session to identify appropriate contacts at the MNO • BP to present current process to the MNO representatives • The MNO to identify communication protocol for information distribution to MNO Citizens • The MNO and BP to identify type of information that should be provided to the MNO – The MNO and BP to define what constitutes “emergency” to each party • The MNO to provide information at community meetings	At regular MNO-BP meeting. Community meeting to coincide with ongoing VC workshops.

The steps outlined in this letter are intended to provide Bruce Power and the MNO with an increased ability to meaningfully incorporate MNO interests into ongoing Bruce Power regulatory filings.

Sincerely,

Germaine Conacher

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#	Section	Page	MNO Comment/Bruce Power Response
Attachment A Application for Renewal of PROL 18.00/2020			
1	**2.5.1 Radiation Protection Program** "Radiation Protection Program, defines implementing standards and processes to ensure all applicable legal requirements are met… BP-PROG-12.05 provides procedures and processes used to ensure radiological incidents, (including dose limit exceedances, action level exceedances, and personnel contamination events) are responded to promptly and investigated to ensure the safety of all workers and the public."	A9 of 70	***MNO Comment:*** This Program is designed to meet CSA and other regulatory requirements, which do not consider Aboriginal (First Nation and Métis) rights and interests. Further, there is no mention of the Métis Nation of Ontario ("MNO) involvement in the development or implementation of this Program. Bruce Power should involve the MNO in this Program. We recommend that Bruce Power develop collaboratively with the MNO a MNO Emergency Communication and Management Plan, which provides formal notification protocol, emergency response and preparedness training programs. ***BP Response:*** Bruce Power is responsible for all emergency response activity on-site. Off-site emergency response is under the authority of the Ontario Fire Marshall (OFMEM). Bruce Power works with OFMEM to ensure effective communication is in place to provide information needed for OFMEM to respond effectively and in a manner commensurate to the risk ensuring public safety. Bruce Power has committed to hosting an awareness day to ensure a better understanding of process is provided. ***MNO Response:*** It is MNO's understanding that in addition to an awareness day, MNO and Bruce Power will develop an Emergency Communication Protocol. As per Bruce Power's commitment at the April 5, 2018 meeting with the GBTTCC, Bruce Power will update their procedures to ensure MNO is notified. Additionally, any environmental incidents reported to the CNSC will be reported to the MNO.
2	**2.5.2 Environmental Management Program** "BP-PROG-00.02, Environmental Management, is structured to address the requirements of: • ISO 14001 :2015, Environmental Management Systems; • CSA N288.5-11, Effluent monitoring programs at Class I Nuclear Facilities and Uranium Mines and Mills; • CSA N286-12, Management System Requirements for Nuclear Facilities; and, • REGDOC-2.9.1 (2013), Environmental Protection: Environmental Protection Policies, Programs and Procedures.	A11 of 70	***MNO Comment:*** None of these requirements with respect to safety, environmental management, quality and economic factors or previous assessments had adequate consideration of potential effects to MNO rights and interests. Therefore, the existing Environmental Management Program is deficient in addressing MNO rights and interests. Therefore, we recommend that the MNO specific information and Valued Components be incorporated into the Environmental Management Program to ensure that risks associated to the Métis specific VCs are well assessed and the adverse impacts are As Low As Reasonably Achievable (ALARA).

#	Section	Page	MNO Comment/Bruce Power Response
	BP-PROG-00.02 is the framework for integrating requirements with respect to safety, environmental management, quality, and economic factors."		***BP Extracted Response:*** Although no novel adverse impacts have been concluded, Bruce Power has committed to developing a MNO Region 7 Specific Dietary Survey that will be used to further refine the more generic hunter/fisherman resident. Furthermore, Bruce Power recognizes the importance of meaningful incorporation of MNO VCs into their broader environmental monitoring program through discussions with the MNO about specific Metis insights into the MNO VCs. ***MNO Response:*** MNO confirms that MNO and Bruce Power are developing a work plan to develop a MNO specific diet survey. As a point of clarification, the note that in Bruce Power's March 26, 2018 response (Bruce Power response), Bruce Power notes: "As the MNO VC report could not be cited, other species identified in that report could not be added." Information provided in the VC Report can be reasonably used for the purpose of the Project impacts assessment and mitigation.
3	**2.6.1 Significant changes since the previous application** "The site-specific survey is completed approximately every five years. The latest site-specific survey is expected to be by the end of Q2 2017."	A15 of 70	As requested, we have received the survey results from Bruce Power on February 20th – MNO and Bruce Power are in discussions to develop a MNO specific diet survey.
4	**2.10.1 Radioactive waste** "The Radioactive Protection Program: • decisions on the management of radioactive waste are based on minimizing risk to the environment, the public, and workers and on minimizing total life-cycle costs for storage and disposal"	A19 of 70	***MNO Comment:*** This program could be more inclusive by specifically referencing a commitment to Aboriginal (First Nation and Métis) groups rather than just assuming it under the category of public. ***BP Response:*** Bruce Power has committed to having more dialogue on this topic with the MNO.
5	**2.10.3 Significant changes since the previous application** "A gap analysis of the waste management program was performed against the CSA N292.3-14 standard. The gap analysis determined that Bruce Power is already in material compliance with N292.3-14."	A20 of 70	***MNO Comment:*** CSA standards are not designed to consider Métis rights and interests. Alignment with CSA standards does not ensure that the potential adverse effects to Métis rights and interest are considered. Potential effects to MNO rights and interests should be considered and referenced in relation to waste management program in accordance with the ongoing commitment to Aboriginal (First Nation and Métis) consultation and engagement.

#	Section	Page	MNO Comment/Bruce Power Response
			BP Response: Bruce Power has committed to having more dialogue on this topic with the MNO. The Licence Application (including the ERA and PEA), the prior refurbishment, previous environmental assessments, and results of research and monitoring programs demonstrate which concluded no novel adverse impacts did include an evaluation of waste. More specifically the ERA evaluated effects from waste streams released from the site over the past 5-years, comparing the effects to those predicted in previous environmental assessment work. The releases encompassed include those from ongoing operation of the site and planned maintenance activities including outages. The PEA looked at continued ongoing operation of the site, planned maintenance activities and MCR refurbishment activities to be completed in the future.
6	**3.4.2 Active/future improvement plans** "Bruce Power is revising all programs to demonstrate full compliance with CSA N286-12, Management System Requirements for Nuclear Facilities…Notification of full implementation is planned to be provided to the CNSC by December 2018".	A30 of 70	***MNO Comment:*** CSA standards are not designed to consider Métis rights and interests. Alignment with CSA standards does not ensure that the potential adverse effects to Métis rights and interest are considered. Potential effects to MNO rights and interests should be considered and referenced in relation to the Environmental Management Program and Radiation Protection Program in accordance with the ongoing commitment to Aboriginal (First Nation and Métis) consultation and engagement. ***BP Response:*** Bruce Power has committed to having more dialogue on this topic with the MNO.
7	**3.7 Class I NFR 3(g): environmental protection policies and procedures** "BP-PROG-00.02 R010, Environmental Management, is the framework for integrating requirements with respect to safety, environmental management, quality and economic factors. The program includes oversight of planning, implementation, and execution of activities, with a focus on minimizing the potential adverse impact of Bruce Power operations on the natural environment."	A34 of 70	***MNO Comment:*** There is no definition for the term "environment" within the Nuclear Safety and Control Act, 2017, therefore we assume that the definition of *environment* used is the definition under the *Canadian Environmental Assessment Act*, 2012 (CEAA, 2012). Focusing only on biophysical environmental components without identifying effects to Métis rights and interests leaves gaps in the environmental policies and Environmental Management Program. Biophysical components are only one facet of Métis rights and by focusing on this, key aspects of Métis cultural and societal values are missed. For example, these components do not allow for Métis attitudes and perceptions to be considered.

#	Section	Page	MNO Comment/Bruce Power Response
			BP Response: Bruce Power defines Environment within our Environmental Safety Management Program as: Environment refers to the components of the earth, including: • Land, water and air, including all layers of the atmosphere • All organic and inorganic matter and living organisms • The interacting natural systems that include components Bruce Power remains committed to having further dialogue on this topic with the MNO.
			MNO Response: The definition of Environment in Bruce Power's Environmental Safety Management Program appears to focus on the biophysical components.
8	**3.10 Class I NFR 3(j): public information program** "BP-PROG-09.02 R004, stakeholder interaction • Public Disclosure Protocol (2012) • In accordance with the Public Disclosure Protocol, Bruce Power commits to: … • Provide information regarding nuclear operations to local organizations, elected officials, agencies and First Nations and Métis communities;"	A37 of 70	***MNO Comment:*** A Public information program and Public Disclosure Protocol are insufficient notification and communication protocols for the MNO. MNO rights and interests cannot be assessed through a Public Information Program. Aboriginal consultation must be directed at each potentially-affected Aboriginal (First Nation and Métis) group. The MNO represents citizens who have constitutionally protected Métis rights that may be exercised in the vicinity of the Project. A specialized notification process should be implemented to ensure the MNO is notified of the general nature and characteristics of anticipated effects on the environment and the health and safety of MNO citizens which may result from the relicensing activity.
			BP Response: Bruce Power remains committed to having further dialogue on this topic with the MNO, to see where there may be opportunities for improvement. Bruce Power recognizes both First Nation and Métis as their own groups of people, this is reflective in the fact the company has individual agreements with each community that outlines ways in which we engage and consult that is beyond the Public Information Program.
			MNO Response: Bruce Power should disaggregate MNO engagement process from the Public Disclosure Protocol. The Relationship Agreement with the MNO is an example of how Bruce Power's commitment to the MNO could be explicitly mentioned.

#	Section	Page	MNO Comment/Bruce Power Response
9	**3.14 Class I NFR 6(c): safety analysis** **3.14.2 Active/future improvement plans** "Bruce Power is working closely with the CNSC to ensure that the updated Bruce A and B Safety Reports result in an equivalent level of safety as that required by REGDOC-2.4.1. Bruce Power plans to have this update issued by December 2017."	A40 of 70	***MNO Comment:*** Is this update (i.e. Accident Analysis) completed and submitted in this application? Bruce Power should inform the MNO of its content. ***BP Response:*** Bruce Power submitted this update (i.e. Accident Analysis) to CNSC in December 2017 as part of our normal 5 year update as required by REGDOC 3.1.1 "Reporting Requirements for Nuclear Power Plants". The update included a new set of analysis on Common Mode Events (i.e. Seismic, High Winds, etc.) as required by REGDOC 2.4.1 "Deterministic Safety Analysis". The Bruce A and Bruce B Safety Reports contain descriptions of the stations and the local site conditions including topography, geology and metrology along with accident analysis for numerous anticipated operational occurrences, design basis accidents and some beyond design basis accidents. The reports contain material that is considered "Controlled Nuclear Information" and Prescribed Information" under the Nuclear Safety and Control Act and Regulations, therefore they cannot be released.
10	**3.19.1 Effects on environment and persons** "Effects on the environment are assessed through an Environmental Risk Assessment (ERA), prepared in accordance with N288.6-12, Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills. A screening-level assessment (B-REP-03443-00011) was completed in 2013, and a higher-level assessment (B-REP-03443-00012) was completed in 2015. "B-REP-03443-00012 includes a human health risk assessment as well as an ecological risk assessment."	A51 of 70	***MNO Comment:*** Bruce Power should provide MNO a copy of the higher-level assessment (B-REP-03443-00012) that was completed in 2015. ***BP Response:*** This can be provided, however this version has been updated to 2017. Please confirm if you would still like to see the older version. ***MNO Response:*** Please provide the updated version.
11	**3.22.4 Emergency response** "BP-PLAN-00001, BP-PLAN-00005, and BP-PLAN-00006 address the response required to minimize the impacts of radiological or conventional releases and their associated risk to safety (employee, public and environment). These plans include: …	A58 of 70	***MNO Comment:*** MNO is concerned about potential impacts to MNO citizen's health and the exercise of Métis rights in the event of accidents and any accidental releases related to the Project. In the event of an accident or emergency spill, MNO should be duly notified and fully aware of any accidents that occur at the Project site. Bruce Power should include MNO representatives in this program and other relevant emergency

#	Section	Page	MNO Comment/Bruce Power Response
	• The requirements to notify off-site authorities of an accidental release, and to report information to off-site provincial, municipal and regulatory authorities. … B-PLAN-07292-00004 ensures coordination of emergency spill response drills on a 5-year cycle, pursuant to 0. Reg. 224/07, Spill Prevention and Contingency Plans."		preparedness training and spills reporting protocol, such as Bruce Power Live Exercise and Spill Drill- 5 Year Plan. We recommend that Bruce Power develop collaboratively with the MNO a MNO Emergency Communication and Management Plan, which provides formal notification protocol, emergency response and preparedness training programs. ***BP Extracted Response:*** Bruce Power is willing to initiate discussion with OFMEM to ensure discussions with MNO are in place. ***MNO Response:*** It is MNO's understanding that MNO and Bruce Power will develop an Emergency Communication Protocol.
12	**3.22.5 Significant changes since the previous applications** "Bruce Power adopted a new Emergency Management Policy statement, established the Emergency Management Oversight Committee to provide strategic direction and executive-level support…and established the Emergency Preparedness Peer Team to improve alignment between the station and center of site Emergency Response Organization. "	A59 of 70	***MNO Comment:*** Further to notes above, MNO's input should be sought and incorporated into emergency response and mitigation measures. We recommend that Bruce Power develop collaboratively with the MNO a MNO Emergency Communication and Management Plan, which provides formal notification protocol, emergency response and preparedness training programs. ***BP Extracted Response:*** Bruce Power is willing to facilitate and participate in dialogue between the MNO and the OFMEM to have further discussion on notification. ***MNO Response:*** It is MNO's understanding that MNO and Bruce Power will develop an Emergency Communication Protocol.
Attachment B Performance Review of Bruce A and Bruce B			
13	**4.2 Hazard analysis** **4.2.3 Future plans** "The suite of reviews and analysis that make up the fire protection assessment are updated on a five-year cycle. Bruce Power plans to complete this update for both Bruce A and Bruce B by Q1 of 2018."	B65 of 192	***MNO Comment:*** Bruce Power should provide this update to the MNO. ***BP Response:*** Bruce Power is currently evaluating this analysis to see if it is able to be released.
14	**7.5 Estimated dose to the public** **7.5.1 Relevance and management**	B114 of 192	Given that the 2016 site specific survey has already been completed, why are the results from 2011 survey used as the baseline data for calculating the doses to the public? Please clarify.

#	Section	Page	MNO Comment/Bruce Power Response
	"Doses to the public are calculated using IMPACT (used to assess the transport of contaminants through specified environmental pathways), annual meteorological data, annual effluent and environmental monitoring data for the Bruce site (including data for on-site facilities operated by OPG and CNL), and site-specific survey results (last completed in 2011)".		Further, the MNO (by choice) did not participate in the site-specific survey. However, MNO has been undertaking a VC monitoring survey with MNO citizens in the Georgian Bay Traditional Territory to determine the impacts on Métis rights and interests – this information should be incorporating into regulatory filings such as this one. Bruce Power should continue to support the development of the MNO specific survey. Additionally, further discussions should be held with Bruce Power on how to incorporate the MNO survey results. ***BP Extracted Response:*** Bruce Power remains committed to working with the MNO to develop a specific Region 7 dietary survey, that further refines the hunter/fisherman resident. Dose calculation tools require specific inputs and questions will need to provide answers that can then be used in the dose calculation tool.
16	**9.2 Environmental management system** "Environmental monitoring includes areas inside and outside the nuclear facility boundaries. The monitoring processes are based on an Environmental Risk Assessment. The objective of environmental monitoring includes: • Assessment of the level of risk on human health and safety, and the potential biological effects in the environment of the contaminants and physical stressors of concern arising from the facility; • Demonstration of compliance with limits on the concentration and/or intensity of contaminants and physical stressors in the environment or their effect on the environment; • Check, independently of effluent monitoring, on the effectiveness of containment and effluent control, and provide public assurance of the effectiveness of containment and effluent control; and, • Verify the predictions made by the Environmental Risk Assessment, refine the models used in the ERA, and/or reduce the uncertainty in the predictions made by the ERA."	B121 of 192	***MNO Comment:*** The objectives of environmental monitoring do not consider assessment and follow-up of impacts to MNO rights, interests and way of life. To fill the gaps in the assessment, we suggest that Bruce Power and MNO continue to implement an MNO specific annual monitoring program and duly develop an associated workplan. ***BP Response:*** Bruce Power remains committed to reviewing the Bruce Power environmental monitoring program and continuing dialogue with MNO to understand how to best consider and incorporate Metis specific values, ideas, insight, information. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area.
17	**9.4 Protection of the public**	B126 of 192	***MNO Comment:*** We suggest that the MNO is involved in the emergency training.

#	Section	Page	MNO Comment/Bruce Power Response
	• "Provision of relevant information and training to relevant interested parties (e.g. employees, public, regulatory agencies), including persons working under its control. ERO staff receives initial orientation and training and participate in an annual drill/exercise."		***BP Response:*** Bruce Power is responsible for all emergency response activity on-site. Off-site emergency response is under the authority of the Ontario Fire Marshall and Emergency Management (OFMEM). Bruce Power works with OFMEM to ensure effective communication is in place to provide information needed for OFMEM to respond effectively and in a manner commensurate to the risk ensuring public safety. ***MNO Response:*** It is MNO's understanding that MNO and Bruce Power will develop an Emergency Communication Protocol.
18	**9.6 Update on the status of the Fisheries Act Authorization** "In addition, the revised application addresses other comments from the CNSC and Metis Nation of Ontario. The revised application includes an Indigenous consultation log and proposed projects for offsets."	B128 of 192	***MNO Comment:*** There were some discussions between Bruce Power and the MNO regarding the DFO Fisheries Act authorization application. However, it is not reflected in the MNO Consultation Log from December 2011 to April 2017 (as per the ERA Appendix M). ***BP Response:*** Bruce Power is willing to review and compare engagement records as they relate to the MNO and Bruce Power interaction on the DFO Fisheries Act Authorization and make any updates to the engagement log when it submits its next revision of the DFO application in 2018.
19	**10.2 Nuclear emergency preparedness and response** "Preparedness and response plans and procedures have been prepared to mitigate the consequences of identified hazards. These plans and procedures have been developed to ensure key objectives are satisfied, including: • Communication to applicable stakeholders (workers, public, regulatory agencies, etc.), • Establishment of response organizations, • Establishment of response facilities and equipment, and, • Evaluation of program effectiveness. Bruce Power works with local municipalities (Kincardine and Saugeen Shores) to ensure their nuclear emergency response plans are adequate. Offsite drills are conducted twice annually with each of the municipalities. Therefore, Bruce Power is confident the municipal plans are adequate."	B129 of 192	***MNO Comment:*** In the event of an emergency, the MNO should be notified to ensure relevant information can be passed on to the Métis harvesters in the region as soon as possible. Therefore, we suggest that formal notification/communication protocol and procedures should be included in these plans. Further, Bruce Power should include MNO representatives in various emergency preparedness programs and training program. MNO input should be sought in developing these emergency response plans. We recommend that Bruce Power develop collaboratively with the MNO a MNO Emergency Communication and Management Plan, which provides formal notification protocol, emergency response and preparedness training programs. ***BP Response:*** Bruce Power is willing to initiate discussion between the OFMEM and the MNO to ensure all are aware of the protocols in place.

#	Section	Page	MNO Comment/Bruce Power Response
			MNO Response: It is MNO's understanding that MNO and Bruce Power will develop an Emergency Communication Protocol.
20	**15.12 Indigenous engagement** **15.12.1 Relevance and management** "Overall, Bruce Power interactions with Indigenous groups are governed by the Stakeholder Interaction program (Section 15.5.1), which ensures that Bruce Power identifies stakeholders, understands their interests and requirements, and provides appropriate levels of communication according to a defined disclosure protocol. Bruce Power is committed to treating its stakeholders with openness and respect. Regularly scheduled meetings develop and maintain positive working relationships with First Nations and Metis communities."	B161 of 192	***MNO Comment:*** The Stakeholder Interaction program is based on Public Information and Disclosure. These interaction activities are stakeholder engagement practices and are not equivalent to meaningful Aboriginal (First Nation and Métis) engagement and consultation. MNO rights and interests cannot be assessed through a generic stakeholder interaction Program. Please disaggregate Aboriginal engagement from the governance of such program. Instead, the Relationship Agreement between Bruce Power and the MNO should be enhanced and implemented to its fullest extent.
			BP Response: Bruce Power works closely with external communities to ensure appropriate interoperability is in place among the tri-services organizations within communities surrounding the Bruce Power site. As an example, the Municipality of Kincardine, Saugeen Shores and the Saugeen Ojibway Nation maintain emergency response organizations such as police and fire and are included in these discussions, However, organizations that do not maintain response agencies and rely upon municipal and provincial response such as the MNO are captured through those response agencies, such as OPP, municipal fire, EMS and local Hospitals.
21	**15.12.5 Concerns Raised** "During the 2015 licence renewal hearing for the Bruce A and B nuclear generating stations, the SON, MNO, and HSM each highlighted concerns in relation to the Bruce site. Additionally, all three communities have provided input into various licensing processes over the years. Bruce Power is committed to continuing to discuss pertinent issues with the Metis and First Nation communities, as well as furthering our understanding of their way of life and rights."	B165 of 192	***MNO Comment:*** While we recognize the efforts and Bruce Power's commitment to understanding the MNO way of life and rights, there is still a lack of incorporation and assessment of the Métis-specific VCs in the ERA and PEA for this application.
			BP Response: Bruce Power remains committed to reviewing the Bruce Power environmental monitoring program and continuing dialogue with MNO to understand how to best consider and incorporate Metis specific values, ideas, insight, information. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area.

#	Section	Page	MNO Comment/Bruce Power Response
22	**15.14.13 Offsite monitoring capability (complete)** “Bruce Power has installed an off-site radiation monitoring system, which minimizes the need for manual off-site data collection by workers. This enhancement involved the installation of 44 gamma spectrometers (as well as 10 additional deployable units that can augment the current system) and 8 aerosol monitors to augment the current system at off-site locations. This enhancement increases data reliability and reduces the staffing burden in an emergency.”	B174 of 192	***MNO Comment:*** We suggest that Bruce Power involve and work closely with the MNO in building the offsite monitoring capacity. Metis-led monitoring should be co-developed to enable increased MNO involvement throughout the operating life of Bruce A and Bruce B. ***BP Response:*** Bruce Power will work with MNO to communicate the purpose and use of the off-site radiation monitoring system.

#	Section	Page	MNO VCs	Comment
Environmental Quantitative Risk Assessment (ERA, October 2017)				
1	**Executive Summary** "The Baseline ERA was prepared in accordance with CNSC REGDOC-2.9.1 Environmental Principles, Assessments and Protection Measures and the PQRA approach described in Canadian Standards Association (CSA) Standard N288.6-12 entitled Environmental Risk Assessment at Class I Nuclear Facilities and Uranium Mines and Mills."	3 of 459		***MNO Comment:*** CSA document is not a publicly available and requires purchase from CSA. Can Bruce Power provide this document? More importantly, the CSA Standards do not speak specifically to Aboriginal rights and interests. Therefore, the risk to rights and interests were not fully considered and uncertainties remain. ***BP Response:*** Bruce Power provided a "portal" on CNSC website for communities to access the CSA standards. Bruce Power is willing to have more dialogue on this topic.
2	**Executive Summary** "Through the ERA process thermal emissions, and impingement and entrainment are identified as Tier 2 risks".	4 of 459		***MNO Comment:*** While thermal emissions and impingement and entrainment are identified as Tier 2 risks, there is no further information regarding Tier 2 risk assessment with respect to the impingement and entrainment in the ERA. Please advise. It is unclear if this was this carried forward to Tier 3? If not, why not?

#	Section	Page	MNO VCs	Comment
				BP Response: The quantitative risk assessment conducted for thermal emission and impingement & entrainment demonstrated a low to negligible risk in the ecological risk assessment. Carrying forward to Tier 3 is required only if further investigation is required. The outcome of the Tier 2 assessment demonstrated low to negligible risk and thus further assessment was not required.
3	**Executive Summary** "As part of the licence process Bruce Power conducted a comprehensive review of publically available literature pertaining to the SON, HSM and the MNO interests in relation to the Bruce site and surrounding area. In addition, a literature review of documentation providing information on socio-economic and cultural heritage elements for Ojibway and Métis peoples in Ontario was also completed."	4 of 459		***MNO Comment:*** There is no mention of previously collected Traditional Knowledge and Use information influencing the selection of Valued Components and the MNO Valued Components Monitoring Report ("MNO VCs Report). The TLU/TK and VCs information have been provided as part of ongoing consultation with Bruce Power. Please indicate if/how MNO interests were collected and considered. ***BP Response:*** Based on the confidential nature of information of Traditional Knowledge Bruce Power wanted to respect the wishes of the MNO and not include references in the ERA or PEA, as information referenced becomes subject to Access to Information Requests. Bruce Power has committed to discussing specific Metis insights into the MNO valued species in order to properly and thoughtfully incorporate such elements into the broader environmental monitoring program and future assessments. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area.

#	Section	Page	MNO VCs	Comment
				MNO Response: As noted earlier, information provided in the VC Report can be reasonably used to inform the Project impacts assessment and mitigation. MNO looks forward to further discussions to ensure MNO information is incorporated while respecting confidentiality concerns.
4	**Executive Summary** "The HHRA for radionuclides was performed for 19 different locations within 20 km of the Site. The group of individuals comprised non-farm residents, farm residents, subsistence farm residents, hunter/fisherman residents, dairy farm residents and a Bruce Eco-Industrial Park (BEC) worker."	5 of 459		***MNO Comment:*** The HHRA for radionuclides largely relies on static locations in the Project vicinity. However, it overlooks the fact that the MNO harvesters are mobile and both live and harvest in the Project vicinity. This could lead to potential different or higher dose exposure than hunters/fisherman residents. Therefore, Métis harvesters should have been identified as a distinct receptor group. ***BP Response:*** Bruce Power will work with the MNO to understand the HHRA specifically for Métis harvesters.
5	**Executive Summary** "The EcoRA for physical stressors considered impingement and entrainment, thermal discharges, bird strikes and vehicle-wildlife collisions… Developed areas and roadways were considered under physical stressors."	6 of 459		***MNO Comment:*** There was no consideration of how physical stressor would affect MNO citizens. ***BP Response:*** Bruce Power will work with MNO to understand how the effect of physical stressors on non-human biota would affect MNO citizens.
6	**Executive Summary** "Where environmental concentrations did not exist for a specific radionuclide, airborne and waterborne effluents from the Site were entered as sources in the IMPACT model to simulate the transport of that radionuclide in the environment. In either case, the IMPACT model was used to determine the radiation dose to humans resulting from all exposure pathways."	8 of 459		***MNO Comment:*** The IMPACT model was used to fill the data gap. However, this model creates likewise inherent uncertainties which are not properly addressed by either additional explanation or evaluation of model uncertainty. Further, this IMPACT model is taken from CSA DRL Guidance, which is not publicly available. Neither was any information or

#	Section	Page	MNO VCs	Comment
				explanation given in this ERA. Does this model consider the maximum concentration in order for the assessment to be conservative? We request further information to ensure the IMPACT model meets the fundamental principles of risk assessment: Transparency and Reasonableness.
				BP Response: Bruce Power utilized maximum ingestion factors for the HHRA dose assessment. Bruce Power will work with MNO to explain how the IMPACT model determines radiation dose to humans from all exposure pathways.
7	**Executive Summary** "The majority of water usage and dietary intake information was taken from the 2016 Site Specific Survey; all other exposure parameters were derived from CSA Standard N288.1-14 Update No. 1."	8 of 459		***MNO Comment:*** As requested, we received the survey results from Bruce Power on February 20th.
				BP Response: Bruce Power has committed to working with the MNO to develop a specific Region 7 dietary survey.
8	**Executive Summary** "A summary of the results of the HHRA for radionuclides are provided below for each receptor category:…"	8 of 459		***MNO Comment:*** Métis specific VCs were not considered as potential receptors. The human health risk assessment did not take into account perceptive effects to the MNO citizens from perceived contamination or environmental pollutants.
				BP Response: The human health risk assessment is conservative. As stated in comment #4 (this section): It is recognized that MNO harvesters are mobile and thus exposure would be different than the hunter/fisherman. As this scenario is a

#	Section	Page	MNO VCs	Comment
				maximum case, the results of using a receptor that is consuming less than 100% of local foods is also less. Bruce Power will work with the MNO to understand the HHRA specifically for Métis harvesters.
9	**Executive Summary** "The receptors that could be exposed included the following: • terrestrial and aquatic plants; • soil and benthic invertebrates; • zooplankton; fish species (Smallmouth Bass, Lake Whitefish, Brook Trout and Spottail Shiner); • mammals (meadow vole, northern short-tailed shrew, red fox, muskrat, water shrew and American mink); • birds (mourning dove, American woodcock, short-eared owl, green-winged teal, semipalmated sandpiper and belted kingfisher); and • reptiles and amphibians (Dekay's brown snake, eastern fox snake, eastern garter snake, eastern ribbon snake, milk snake, northern red-bellied snake, northern water snake, and smooth green snake; midland painted turtle and snapping turtle; western chorus frog, green frog, grey treefrog, northern leopard frog, spring peeper, woodfrog and red spotted newt; and American toad)."	9 of 459		***MNO Comment:*** The identified receptors do not include several important species harvested by MNO Citizens, such as yellow perch, herring, pickerel in (Lake Huron), deer and moose. ***BP Response:*** Receptors used in the EcoRA are meant to be representative of a feeding guild or broader group. Yellow Perch occupy nearshore environments and would have similar behavior to that of Smallmouth Bass for example. All fish species that were entrained or impinged are listed. The rationale for species selection for the thermal assessment is also provided. For dose to fish, pelagic (open water) and benthic fish (bottom feeders) are considered. For dose to humans consuming fish, transfer factors are used which are conservative estimates for fish consumption.
10	**Executive Summary** "Receptors were not considered to be exposed to substances in air. The United States Environmental Protection Agency (U.S. EPA) has noted that inhalation is likely to be a minor route of exposure for ecological receptors and thus will contribute little to potential risks to the receptors."	10 of 459		***MNO Comment:*** This assessment is problematic as Métis harvesters could be affected directly or indirectly (perceptions and attitudes) affected by the Project. Métis harvesters are potential receptors due to changes in perception based on radiological or non-radiological airborne and waterborne release. ***BP Response:*** Bruce Power is willing to have further dialogue on this topic with the MNO.

#	Section	Page	MNO VCs	Comment
11	**Executive Summary** "Physical stressors The potential interactions between the site and the environment include physical stressors, such as changes in noise level, surface water flow, and thermal profile, and direct mortality as a result of entrainment and impingement, bird strikes, habitat alternation and vehicle-wildlife collisions."	11 of 459		***MNO Comment:*** There was no consideration of how physical stressors would affect Métis citizens. For example, there is no mechanism to assess the effects related to noise as a physical stressor on Métis citizens. ***BP Response:*** Bruce Power will work with MNO to understand how the effect of noise on non-human biota would affect MNO citizens.
12	**Executive Summary** "The dose resulting from internal exposure was calculated using empirically-derived Concentration Ratios (CRs), which correlate the radionuclide concentration in environmental media to the concentrations in the biota tissue. These concentration ratios account for ingestion via the entire food chain in a simplified manner. All of the concentration ratios and dose coefficients were taken from the ERICA Tool: Ecological Risk from Ionizing Contaminants: Assessment and Management. The exposure equations were based on the guidance provided in CSA Standard N288.6-12."	13 of 459		***MNO Comment:*** There is no discussion in this, or subsequent sections throughout this ERA, about increased avoidance behaviors due to perception of exposure to radiation dosage. Further, calculating the radiation dose based on concentration ratios and dose coefficients taken from the ERICA Tool creates uncertainties which are not properly addressed by either additional explanation or evaluation of model uncertainty. Also, this ERICA Tool is taken from CSA DRL Guidance, which is not publicly available. We request further information to ensure the ERICA Tool meets the fundamental principles of risk assessment: Transparency and Reasonableness. ***BP Response:*** Bruce Power is willing to have further dialogue on this topic. The purpose of the radiological portion of the Ecological Risk assessment is to quantify the dose to non-human biota and compare this to benchmarks to characterize risk. Historic and recent surveys do not indicate avoidance behaviours when considering species present over time.

#	Section	Page	MNO VCs	Comment
13	**Executive Summary** Based on the review of the past Bruce Power-specific related concerns raised by Indigenous communities, all technical considerations within the construct of the CSA N288.6 framework have been dispositioned and those related to the ERA have been highlighted within the text.	14 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Contamination of Resources • Perceived Pollutants In the Environment	***MNO Comment:*** Using CSA standards to categorize MNO concerns is insufficient as the CSA standards are not designed to consider Métis rights and interests. For example, there was no consideration of Métis-specific VCs and perceptive effects to Métis rights and interests which has been expressed during the ongoing consultation and engagements. ***BP Response:*** Bruce Power has committed to discussing specific Metis insights into the MNO valued species in order to properly and thoughtfully incorporate such elements into the broader environmental monitoring program and future assessments. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area. ***MNO Response:*** As noted earlier, information provided in the VC Report can be reasonably used to inform the Project impacts assessment and mitigation. MNO looks forward to further discussions to ensure MNO information is incorporated while respecting confidentiality concerns.
14	**1.1 Background** Using the Tier I approach as described in CSA Standard N288.6-12, a Screening Level Risk Assessment (SLRA) was prepared by AMEC NSS (2013). The outcome of the SLRA was that risks were predicted for human health and ecological receptors for a number of non-radiological and radiological substances.	23 of 459		***MNO Comment:*** Were physical stressors to the exercise of Métis rights and interests considered in the Tier 1/SLRA screening level risk assessment? Can Bruce Power provide further explanation? ***BP Response:*** Physical stressors and their effect on non-human biota were considered in the Ecological Risk Assessment. Bruce Power will work with MNO to understand how the effect of noise on non-human biota would affect MNO citizens. No benchmarks are available for noise levels on wildlife and thus a quantitative assessment could not be completed. However, deer are consistently sought for harvest in Wildlife Management Unit

#	Section	Page	MNO VCs	Comment
				surrounding the Bruce site.
15	**1.1 Background** Under the CSA process, a Tier II or Preliminary Quantitative Risk Assessment (PQRA) was required to further characterize the risks. … Risks to aquatic life due to physical stressors of impingement and entrainment and thermal discharges were carried forward to a Detailed Quantitative Risk Assessment (DQRA) due to the lack of benchmark values to determine no effect.	24 of 459	**Metis Lands, Resources & Water** • Availability of Resources	***MNO Comment:*** As noted above, thermal emissions and impingement and entrainment are identified as Tier 2 risks, why a Tier 2 risk assessment was not carried forward in accordance with the risk assessment approach specified under CSA Standard N288.6-12? Instead the Detailed Quantitative Risk Assessment (DQRA) was performed, is it equivalent to Tier 2 or Tier 3 risk assessment? The inconsistent reference to Tier 2, Tier 3 and DQRA throughout the ERA is causing confusion. Please clarify. As the CSA standards are not publicly available, can Bruce Power provide a copy of the DQRA? ***BP Response:*** A Tier 2 risk assessment was conducted for impingement and entrainment (see Section 5.4.5 of the Oct ERA) and thermal emissions (see Section 5.4.3 of the Oct ERA). For thermal emissions, where HQ>1 were identified, a more thorough examination was carried out using DQRA methodology as outlined in CSA N288.6. The quantitative risk assessment conducted for thermal emission and impingement & entrainment demonstrated a low to negligible risk in the ecological risk assessment. Carrying forward to Tier 3 is required only if further investigation is required. The outcome of the Tier 2 assessment demonstrated low to negligible risk and thus further assessment was not required. ***MNO Response:*** This paragraph states that impingement and entrainment and thermal discharges were carried forward to a DQRA. However, neither detailed information regarding the PQRA nor DQRA of impingement and entrainment was found under Section 5.4.5. Please elaborate how the impingement and entrainment

#	Section	Page	MNO VCs	Comment
				assessment was done and how the conclusion of low to negligible risk was reached. In respect of the thermal results where HQ >1, only Lake and Round Whitefish eggs were carried forward for a DRQA whereas "Walleye and Yellow Perch eggs and Yellow Perch spawning stage had maximum HQ values that were more than 50% higher than observed at the reference sites during the same time period" and white sucker has 42% (compared to 33% of Lake Whitefish) of time with HQ >1 and is 25% more than a reference site. Please elaborate why only these two species are selected for further assessment. Further, the DQRA undertaken and information provided under Section 5.4.3 (page 252) was based on literature only, which compared temperature data collected near Site to updated thermal criteria from whitefish embryo incubation studies reported in the literature. According to CSA Standard N288.6-12, a DQRA "can involve a refined exposure assessment and risk characterization or field studies. It can use additional site-specific monitoring data or more sophisticated modelling to estimate more realistic exposure concentrations". Therefore, we suggest that the DQRA should be done in a more fulsome manner by being incorporated with the annual monitoring program.
16	**1.1.1 Revisions Since Last Version** • Update of the associated radiological exposure dose modelling, predominant modifications being: o Addition of a hunter/fisherman receptor that is representative of Indigenous Peoples (refer to Section 4.1.1); … • Incorporation of Indigenous input, where available.	24 of 459		***MNO comment:*** No details about a hunter/fisherman receptor is found in Section 4.1.1. Can Bruce Power provide more information? ***BP Response:*** Relevant information is provided under Section 6.1.1
17	**1.3.3.2 Métis Nation of Ontario** "Additionally, the MNO have expressed the following interests related to the Bruce Power site:	32 of 459	**Metis Lands, Resources & Water** • Perception of Change in	***MNO Comment:*** There is no mention of the Métis-specific VCs specified in the MNO VC Report, namely Metis Lands Resources and Water and Metis

#	Section	Page	MNO VCs	Comment
	• impacts on Métis rights and interests including hunting, trapping, harvesting and other traditional practices; • DFO Authorization Process; • impacts of operations on white tailed deer and muskrat; • facility safety; • the adequacy of previous studies for the Bruce A Refurbishment in assessing impacts on Métis fishing, hunting and trapping activities as valued ecosystem components; • impacts to fish species and/or fish habitat from changes in water flow and circulation and increased lake temperature, including impacts to Yellow Perch and Smallmouth Bass; • potential radiological contamination of fish, wild food, and medicinal terrestrial plants consumed by and/or sacred to the Métis; and • the need for radiation testing or monitoring of Métis people as a distinct group, given their regular consumption of wild foods, animals and fish."		Land or Water Available • Availability of Resources **Metis Nationhood** • Participation in Community Events • Perception of Change in Key Components of Metis Identity • Actual Opportunities for Business / Contractors • Perceived Opportunities for Business / Contractors •	Nationhood. ***BP Response:*** Bruce Power remains committed to reviewing the Bruce Power environmental monitoring program and continuing dialogue with MNO to understand how to best consider and incorporate Metis specific values, ideas, insight, information. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area.
18	**1.5.4 Environmental Monitoring** **1.5.4.1 Independent Environmental Monitoring Program** -All-	38 of 459		***MNO Comment:*** As noted in Appendix N-Bruce Power Indigenous Community Interests-MNO ("MNO Interests Report"), we recommend that a concrete and actionable working plan with regards to the MNO Annual Monitoring Program be duly developed in collaboration with the MNO. ***BP Response:*** Bruce Power remains committed to reviewing the Bruce Power environmental monitoring program and continuing dialogue with MNO to understand how to best consider and incorporate Metis specific values, ideas, insight, information. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area.
19	**2.2.6 Wildlife Habitat and Communities** "Additional wildlife surveys are planned in 2017."	61 of 459		***MNO Comment:*** Were the wildlife surveys completed in 2017? Can Bruce Power provide the updates on such survey results?

#	Section	Page	MNO VCs	Comment
				BP Response: Wildlife surveys were carried out in 2017 and the results were incorporated into the Oct ERA (B-REP-03443-18OCT2017) where applicable. Surveys included vegetation communities, migratory birds, predator birds, wildlife habitat, reptiles and amphibians, which can be found in Section 2.2.5 and 2.2.6. More information will be provided in the 2017 Environmental Protection Report (previously called Environmental Monitoring Program (EMP) Report) and, if of interest, may be discussed at a future Bruce Power - MNO meeting.
20	**2.2.7.1 Aquatic Habitat** "Areas not considered to represent aquatic habitat include the following: • Drain under Interconnecting Road is a constructed ditch located south of Bruce A that eventually drains into MacPherson Bay. The Unnamed Ditch runs north and south of the Interconnecting Road and is used to manage stormwater drainage [8]. The Unnamed Ditch is approximately 1.5 m deep near the road and the bottom of the ditch is alternately grass-lined or filled with cattails (upstream of Interconnecting Road) or lined with cobbles (downstream of Interconnecting Road). Drainage under the road is conveyed through three culverts, which are partially blocked by sediment and aquatic plants. The Unnamed itch flows downstream of Interconnecting Road before it discharges to MacPherson Bay via a grassy swale containing some cattails. The Unnamed Ditch generally has no water or stagnant water outside of storm events. • The primary function of the On-Site Wetland located east of the WWMF is to control stormwater drainage [9]. Water levels fluctuate throughout the year, and there are times when the wetland contains areas of open standing water. The On-Site Wetland largely contains cattails and large organic debris. • The Ornamental Pond on CL4 is not considered aquatic habitat as it is a man-made water feature which retains storm water and is located within the former Construction Landfill #4. It is noted however, that this pond was assessed in the terrestrial component of the EcoRA given that birds may occasionally land	68 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Lack of Use of Land or Water in Proximity to the Project • Perceived Contamination of Resources • Perceived Pollutants in the Environment	***MNO Comment:*** Areas not considered to represent aquatic habitat following on the Ontario Environmental Protection Act, Part XV.1, Ontario Regulation 153/04 definition exclude potentially significant surface water features on or around the site, including the On-Site Wetland, the storm water drain under Interconnecting Road, and the railway ditches. These features represent likely habitats related to important Metis-harvested resources. ***BP Response:*** These features are engineered for the purposes of drainage and are not considered to represent aquatic habitat. Ditches and the stated stormwater drainage areas are not wetted year round. The ornamental pond likely freezes to bottom. These areas thus cannot support aquatic life year round. Lagoons are shallow and were considered for birds which may land in these areas. ***MNO Response:*** The presence or absence of a habitat related to important Metis-harvested resources should be considered regardless of the origin of the feature (engineered or natural) and whether it is a year-round or seasonal habitat.

#	Section	Page	MNO VCs	Comment
	on this water feature. • The CSL and FSCWL are former sewage/sludge lagoons that are not considered aquatic habitat as they have been constructed and maintained for industrial use only. As indicated for the Ornamental Pond on CL4, these lagoons were assessed in the terrestrial component of the EcoRA given that birds may occasionally land on this water feature. • Other ditches present on the Site that serve as drainage or stormwater conduits to the Lake Huron shoreline. "			
21	**2.2.7.3 Periphyton and Phytoplankton** "Studies prior to the commissioning of the Site found that little attached algae (periphyton) was found on the shoreline or nearshore areas due to low nutrient levels, cool water temperatures and exposure to high energy environments [10]. In an algal growth study carried out along the Lake Huron shoreline, the presence of periphyton was confirmed in this area [192]. Locally, higher concentrations were noted in Baie du Doré, due to warmer temperatures, limited ice scour, and shelter from the wind and wave actions of Lake Huron. Phytoplankton communities were examined at Gunn Point, the Bruce A and Douglas Point discharge channels and Baie du Doré between 1975 and 1979 [10]. Phytoplankton in these locations were characterized as highly variable and was typically highest in Baie du Doré, and lowest at Gunn Point. In general, phytoplankton density and diversity in Lake Huron was low due to the limited productivity of this oligotrophic Lake. In June of 2003, the occurrence of nuisance benthic algae, specifically Cladophora, was investigated along the southeastern shores of Lake Huron by the MOECC following reports of shoreline fouling by decaying organic matter over the preceding 2 to 3 years [245]. The main species of benthic algae observed during the surveys was Cladophora glomerta, although its occurrence was intermittent and was thought to be localized to areas with lake nutrients that were supportive of growth, and minimal areas of shoreline fouling were observed. No significant areas of	70 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Pollutants in the Environment	***MNO Comment:*** The increasing occurrence of nuisance algae along the eastern shoreline of Lake Huron, including Baie du Dore, suggests a changing aquatic ecosystem that will alter habitats of important Metis-harvested resources including fish species of interest to the MNO. The increased frequency in the occurrence of nuisance algae influences perception of access to water and the quality of water in Lake Huron and Baie du Dore. Changes to the aquatic vegetation in Lake Huron are acknowledged to be influenced by factors in addition to Bruce Powers operations and emissions. However, ongoing operations at Bruce Power will contribute to changes to aquatic habitat in Lake Huron through the relicensing horizon, specifically near the Bruce Power site. The cumulative effect of Bruce Power's thermal emissions coupled with rising lake temperatures, other thermal influences and nutrient (i.e. phosphorus) loading is expected to impact aquatic habitat(s) for mammals, reptiles, amphibians and fish. MNO requests that Bruce Power should: • Evaluate the cumulative effect of Bruce Power's thermal emissions coupled with rising lake temperatures, other thermal influences and nutrient loading on important aquatic habitats for mammals, reptiles, amphibians and fish; and

#	Section	Page	MNO VCs	Comment
	shoreline fouling were found in the investigated areas close to the Site. More recently, a study of algal fouling along the southeastern shore of Lake Huron was carried out in 2007/2008 [246]. From coverage at 11% of sites in 1977, coverage increased to nearly 90% of sites by 2007, with the most abundant algae found in sheltered areas and those where shoreline irregularities interrupt longshore flow. The species found were 62% periphyton turf, followed by 30% Chara and 8% Cladophora."			• Develop and implement a comprehensive long-term monitoring program to evaluate the cumulative impacts of thermal emissions. ***BP Response:*** Bruce Power is partnering with the Council of the Great Lakes Region to conduct a climate change study. Bruce Power continues to review ongoing and predicted future operations, to ensure that adaptive mitigation to changes in climate will be incorporated. Monitoring of temperature and water currents year round allows Bruce Power to understand the dynamic shape of the thermal footprint, which is 0.03% of the surface area of Lake Huron. Bruce Power has monitored thermal emissions for many years and will continue to do so as part of ongoing regulatory compliance. A cumulative effects assessment is also ongoing. ***MNO Response:*** MNO may have traditional knowledge that could be valuable and aid in informing the climate change study. Bruce Power has indicated that MNO will be invited to participate.
22	**2.2.7.4 Zooplankton** "... studies indicating dramatic changes in zooplankton community of Lake Huron since 2003, it is anticipated that the zooplankton community around the site has also changed reflecting the broader ecosystem patterns that have established in Lake Huron and will continue to reflect ongoing changes in the future."	71 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Pollutants in the Environment	***MNO Comment:*** Changes in the zooplankton community of Lake Huron can be interpreted as an indicator of systemic change in the broader Lake Huron ecosystem with potentially significant impact to MNO rights and interests. Ongoing operations at Bruce Power through the relicensing horizon will contribute to changing aquatic habitat in Lake Huron, specifically near the Bruce Power Site. MNO requests that Bruce Power should: • Develop and implement a long-term monitoring program to characterize and quantify changes to the zooplankton community influenced by Bruce Power's ongoing operations.

#	Section	Page	MNO VCs	Comment
				BP Response: There is no known change in the plankton community in the area near the Site; however, Bruce Power is partnering with the Council of the Great Lakes Region to conduct a climate change study. ***MNO Response:*** Section 2.2.7.4 documents that "studies indicating dramatic changes to in the zooplankton community of Lake Huron since 2003, it is anticipated that the zooplankton community around the site has also changed reflecting the broader ecosystem patterns". This directly contradicts BP response. The contradicting statements should be resolved.
23	**2.3 Areas of Previous Environmental Investigation** "Given that the ecological component of the Baseline ERA focused on on-site exposures, it was considered reasonable to exclude those areas that are in active industrial use. These industrial areas were not assessed further in the Baseline ERA given the lack of ecological habitat and/or lack of complete exposure pathways. However, there were two areas that are classified as "active industrial" that were included in the assessment: the Bruce A Storage Compound (BASC) and Distribution Station #8 (DS8). These areas can be described as having a gravel cover with grasses and shrubs, which may be used occasionally by some ecological receptors."	79 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Contamination of Resources • Perceived Pollutants In the Environment	***MNO Comment:*** Some "active industrial" areas such as Paint and Sandblast shop, Bunker C Oil tanks and Ignition Oil Day Tanks could have potential impacts on MNO Citizens in the Project vicinity in the event of dust control and bunkers leakage malfunctions. Métis rights and interests straddle the ecological and human health risk assessments. However, it was considered in neither. This has resulted in potential effects to Métis rights and interests not being explicitly considered. ***BP Response:*** Bruce Power has committed to discussing specific Metis insights into the MNO valued species in order to properly and thoughtfully incorporate such elements into the broader environmental monitoring program and future assessments. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area. ***MNO Response:*** As noted earlier, information provided in the VC Report can be reasonably used to inform the Project impacts assessment and mitigation. MNO looks forward to further discussions to ensure MNO information is incorporated while respecting confidentiality concerns.

#	Section	Page	MNO VCs	Comment
24	**3.0 TIER 1 CHEMICAL SCREENING** "The Tier 1 screening was used for chemicals only; Tier 1 screening was not completed for radionuclides or physical stressors. Please refer to Section 4.1.2.8 and Section 5.0 for additional information on physical stressors for human health and ecological health, respectively, and Sections 6.0 and 7.0 for additional information related to radionuclides."	93 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Lack of Use of Land or Water in Proximity to the Project • Perceived Contamination of Resources • Perceived Pollutants In the Environment	***MNO Comment:*** Bruce Power should provide further rationale for why physical stressors to the exercise of MNO rights and interests were not considered in the Tier 1 risk assessment? ***BP Response:*** Bruce Power will work with MNO to understand how the effect of noise on non-human biota would affect MNO citizens.
25	**3.1 Summary of Data Relied Upon in the Baseline ERA** "Given that the HHRA focussed on health risks for off-site receptors, the data relied upon for the HHRA for chemicals included off-site environmental quality data for the following environmental media: • Bruce A and Bruce B surface water discharges; • air emissions; • surface water from various locations off-shore in Lake Huron; and • drinking water from shallow residential wells and nearby water treatment plants.	94 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Lack of Use of Land or Water in Proximity to the Project • Perceived Contamination of Resources • Perceived Pollutants In the Environment	***MNO Comment:*** The baseline data which the Tier 1 chemical screening relied upon did not consider the traditional use of Lake Huron by MNO Citizens. The exercise of the MNO rights and interests was not considered in the Tier 1 assessment despite a mention of exposure to offshore surface water and sediment in Lake Huron. There is no section in either the human health assessment or in the ecological assessment which considers the impacts on Métis harvesters' health or their perception of potential contaminants or pollutants on their food sources. ***BP Response:*** Bruce Power is willing to continue dialogue on this. Bruce Power has committed to discussing specific Metis insights into the MNO valued species in order to properly and thoughtfully incorporate such elements into the broader environmental monitoring program and future assessments. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area.

#	Section	Page	MNO VCs	Comment
				MNO Response: As noted earlier, information provided in the VC Report can be reasonably used to inform the Project impacts assessment and mitigation. MNO looks forward to further discussions to ensure MNO information is incorporated while respecting confidentiality concerns.
26	**3.2 Overview of the Tier 1 Chemical Screening Process** "When identifying COPCs [*Chemicals of Potential Concern*], biologically essential and generally non-toxic chemicals were excluded where it was scientifically defensible to do so. For example, essential elements that are fundamentally non-toxic parameters including calcium, potassium and magnesium were eliminated from further consideration. Thus calcium, magnesium and potassium were not retained as COPCs in the Baseline ERA."	100 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Pollutants in the Environment	***MNO Comment:*** Chemical compounds, like potassium, that are biologically essential and considered to be generally non-toxic are understood to influence system changes in aquatic environments. When considered in the context of broader complex natural systems, potassium and other nutrients can contribute to changes in aquatic habitat and impact MNO Valued Components. The proponent's failure to consider these compounds, results in a gap in data needed to forecast and/or mitigate potential effects to the aquatic environment around the Site. For instance, the cumulative impact of biologically essential compounds, including but not limited to potassium, originating at and around the Site, coupled with elevated thermal discharges can be expected to influence the growth and distribution of freshwater organisms including phytoplankton. We recommend that Bruce Power should complete an assessment of the cumulative effects of the excluded COPCs, including biologically essential compounds, to evaluate system impacts to the aquatic environment near the Bruce Power site.
				BP Response: The purpose of the ERA is to assess the effect of Bruce Power operations on the environment. Compounds, such as potassium, were measured in soil, groundwater, inland surface water, sediment, lake surface water (see Table A-15a, Table A-16a, Table A-17a, Table A-18a, Table A-22, Table A-23, Table A-24), with values measured below the water quality guidelines. Thus there is not a data gap. These compounds are naturally occurring and thus were not identified as a Chemical of Potential Concern as they are not part of emissions.

#	Section	Page	MNO VCs	Comment
				MNO Response: The assessment of the effects of the excluded COPCs can be incorporated into the broader Climate Change Study being undertaken with the Council of the Great Lakes Region.
27	**3.4.2 Air** "The 2016 ESDM Report was relied upon to characterize concentrations of chemicals in air to which human receptors may be exposed via inhalation (refer to Section 5.1.3.2 for discussion regarding ecological receptors). Additionally, the site-specific emission limits cited in the ESDM report were used for Tier 1 screening. … The limits used for each of the chemicals and averaging times above are protective of the most sensitive endpoint, which include but are not limited to health, odour, or corrosivity. Given that no concentrations were greater than their POI limits, no COPCs in air were identified and thus none were carried forward into the HHRA."	106 of 459	**Metis Lands, Resources & Water** • Perceived Pollutants In the Environment	***MNO Comment:*** No information related to air contaminants was found in Appendix A Tier 1 chemical screening, therefore we could not understand what is screened into the Tier 1 screening assessment and why those COPCs were not carried forward into the HHRA. Please provide clarification. Also, why was no sampling of environmental concentrations in air collected as part of the baseline for Tier 1 chemical screening? Please provide clarification the atmospheric dispersion modelling and how the ESDM (Emission Summary and Dispersion Modelling) report was a suitable proxy. No further discussions related to human receptors exposure via inhalation was found under either Section 5.1.3.2 or 5.1.4 as directed thereunder. Lastly, there was no consideration of Métis harvesters as potential receptors due to changes in perception based on contaminants released to the air.

#	Section	Page	MNO VCs	Comment
				BP Response: Appendix D in the Oct ERA (B-REP-03443-18OCT2017) listed all of the airborne contaminants from all significant sources of chemicals from Bruce Power operations as the maximum point of impingement (MPOI) concentration and compared that to the MOE POI limit. All emissions were below the guidelines and were therefore not carried forward to the HHRA. The Emission Summary and Dispersion Modelling (ESDM) Report documents emissions from all sources at the facility and is a requirement of Bruce Power's Environmental Compliance Approval (Air). The ESDM report demonstrates that based on the conservative estimation techniques and dispersion modelling, the facility is capable of operating in compliance with Ontario Regulation 419/05. The major sources of contaminants on the site include weld fumes from numerous weld stations, NOx emissions from diesel fuel combustion, trace contaminants found in the vented steam (from water treatment chemicals). The contaminant emissions from welding sources are based on weld rod/wire types, usage rates and emission factors. The contaminant emissions from diesel engines are based on emission factors. The contaminant emissions from steam venting are estimated for normal and start-up operations and take into account the maximum concentration of the chemical in the feedwater system, flow rates for the different vents and the distribution coefficient for water to steam. This provides the most extreme case in emissions from steam venting and is a very conservative approach.

#	Section	Page	MNO VCs	Comment
28	**3.4.5 Surface Water** "Three surface water categories were assessed in the Baseline Environmental Risk Assessment, divided by location: off-site (Lake Huron), on-site Ponds (ornamental pond on CL4 and the lagoons at the FSL and CSL) and Stream C (on-site)."	112 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Lack of Use of Land or Water in Proximity to the Project • Perceived Contamination of Resources • Perceived Pollutants in the Environment	***MNO Comment:*** As discussed in comment #17, excluding surface water features that don't meet the O.EPA definition of an aquatic habitat isn't protective of Metis resources that are significant to MNO Valued Components. We recommend that Bruce Power should: • Revise the Environmental Risk Assessment to consider effects to these resources. ***BP Response:*** Surface water features were considered including the Bruce A and Bruce B discharge, MacPherson Bay and Baie du Dore as well as Stream C. Surface water features which were excluded were engineered for the purposes of drainage and cannot support aquatic life year round. ***MNO Response:*** The presence or absence of a habitat related to important Metis-harvested resources should be considered regardless of the origin of the feature (engineered or natural) and whether it is a year-round or seasonal habitat.
29	**3.4.6 Stormwater** "Periodically, phosphorus concentrations in samples collected exceeded the guideline of 0.03 mg/L for waterways. Studies long the Lake Huron shoreline have identified agricultural land uses as the source of phosphorus in surface water [193]. As a result, phosphorus is not considered to be due to industrial activities at the Site and was not retained as a COPC in the EcoRA."	115 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Contamination of	***MNO Comment:*** The cumulative effect of nutrients like phosphorus in the aquatic environment coupled with rising lake temperatures and Bruce Power's thermal emissions is expected to impact MNO Valued Components (aquatic habitat(s) for mammals, reptiles, amphibians and fish).'

#	Section	Page	MNO VCs	Comment
			Resources • Perceived Pollutants in the Environment	***BP Response:*** Bruce Power is partnering with the Council of the Great Lakes Region to conduct a climate change study. Bruce Power has monitored thermal emissions for many years and will continue to do so as part of ongoing regulatory compliance. A cumulative effects assessment is also ongoing.
30	**4.0 Human Health Risk Assessment for Chemicals and Physical Stressors** **4.1.2.8 Physical Stressors** "Noise was the only physical stressor identified for human health in the SLRA, and no changes to the operations that may warrant the assessment of other physical stressors were identified. However, it was acknowledged that the sound levels may occasionally exceed the nighttime limits 3 to 10 dBA at the nearest off-site monitoring points. There is overall no adverse effect associated with the noise levels attributable to the facility as of the date of this report. … No noise control measures are recommended."	122 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Lack of Use of Land or Water in Proximity to the Project	***MNO Comment:*** The MNO was not considered as a potential receptor for noise. This is problematic as Métis harvesters near the Project would be affected by noise. Furthermore, the HHRA did not consider perceptive effects related to noise as a physical stressor on MNO Citizens. Consequently, no control or mitigation measures were recommended. ***BP Response:*** As stated in Section 4.1.2.8 of the October ERA, "the sound levels of the Bruce Power facility comply with the applicable MOECC night-time noise limit". Bruce Power will work with MNO to understand how the effect of noise would specifically affect MNO citizens.
31	4.1.2.9 Summary of Secondary Screening of Chemicals and Physical Stressors "The only chemical retained for further consideration in the HHRA is morpholine.	123 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Contamination	***MNO Comment:*** This is problematic as perception of Métis Citizens should have been considered in some capacity, whether it be a physical stressor or otherwise.

#	Section	Page	MNO VCs	Comment
	No physical stressors were retained for further consideration in the HHRA."		of Resources • Perceived Pollutants In the Environment	***BP Response:*** Bruce Power is willing to further discuss this in more detail.
32	**4.1.3 Selection of Exposure Pathways** "Morpholine was not identified as a COPC during Tier 1 Screening for air, soil, groundwater, or sediment."	124 of 459		***MNO Comment:*** On page 7, it states that "Morpholine was identified as the only COPC". This statement is conflicting and confusing. Bruce Power should provide clarification. ***BP Response:*** Morpholine was identified as a potential COPC in surface water, in particular the nearshore waters of Lake Huron. In the Tier 1 screening, the only locations where the morpholine concentration (0.006mg/L) marginally exceeded the interim Provincial Water Quality Objective (PWQO) of 0.004mg/L were at the Off Bruce A Discharge and Off Bruce B Discharge sampling sites. All other sampling locations, including Baie du Dore and Inverhuron Park, met the interim PWQO. The HHRA considered the most extreme, yet realistic, exposure case, which involved a toddler (most sensitive receptor) swimming close to the discharge with potential exposure to morpholine through incidental ingestion and dermal contact. The estimated exposure dose was determined to be much lower than the "safe dose" level and the estimated health risk was considered low.
33	**4.1.4 Human Health Conceptual Site Model** "Therefore, the potential for morpholine to accumulate and be retained in fish tissue is considered to be low and as such, this pathway was not retained for further assessment."	127 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Lack of Use of Land or Water in Proximity to the	***MNO Comment:*** No discussion in this section or subsequent sections was given to a potential increase in avoidance fishing behaviors due to perception of exposure to chemicals. There is a lack of consideration of Métis VCs as potential receptors.

#	Section	Page	MNO VCs	Comment
			Project • Perceived Contamination of Resources • Perceived Pollutants In the Environment	***BP Response:*** Avoidance thermal criteria were considered for fish species by life stage in the October ERA and fish were not found to be avoiding the area. Chemical emissions remain within water quality guidelines which are set to be protective of biota including fish. Creel surveys at the Baie du Dore and Inverhuron boat launches, from 2009-2017, show similar species being caught locally over time and thus do not indicate fish avoidance. ***MNO Response:*** The initial comment is in reference to avoidance behaviours by MNO Harvesters. i.e. people may avoid fishing in the areas because of a fear or perception that the resource (fish) are exposed to chemicals.
34	**4.3.3 Uncertainties and Assumptions in the Toxicity Assessment** "The uncertainties in the toxicity assessment relate to data gaps in the scientific literature and toxicity data available on morpholine. In further revisions of the report, if additional scientific data become available, the HHRA will be updated accordingly."	135 of 459		***MNO Comment:*** As morpholine is the only non-radiological parameter carried forward in the HHRA assessment, it is important that such data gaps are filled. In the absence of data, the risk characterization becomes largely speculation and the confidence level is fairly low. In that scenario, effects monitoring will be of great importance as the Project proceeds. We therefore request that Bruce Power identify monitoring needs and develop a monitoring plan with MNO. ***BP Response:*** Bruce Power remains committed to working with the MNO to develop and implement an MNO specific monitoring plan.
35	**4.4.4 Cumulative Effects in the Human Health Risk Assessment** "The only reasonably foreseeable project in the area close to the Site is the proposed Deep Geologic Repository (DGR), which is proposed	136 of 459		***MNO Comment:*** The cumulative effects assessment is largely superficial. There is no characterization of the residual effects and no determination of cumulative effects of significance.

#	Section	Page	MNO VCs	Comment
	within the footprint of the Site to the north of the WWMF. However, given that DGR is not anticipated to use morpholine in any of its construction, operations, or closure phases, there are no other sources of morpholine that may contribute to human exposure in the area." **5.1.1 Receptor (Valued Ecosystem Components) Selection** "Larger mammals (e.g., white-tailed deer) were not selected for assessment because they are typically less sensitive to chemicals than smaller mammals because of lower metabolic rates which minimizes exposure. For example, the meadow vole was selected as a mammalian herbivore, but this species is intended to represent other mammalian herbivores including the white-tailed deer. Deer will be included in future iterations of the non-radiological assessment for consistency with the radiological assessment and based on stakeholder interest."			***BP Response:*** Morpholine in surface water was the only COPC identified for further review for human health in the October ERA. Thus when considering the cumulative effects, this is the only compound requiring further evaluation when considering the effect of multiple projects in addition to Bruce Power operations.
36		139 of 459	**Metis Lands, Resources & Water** • Perceived Contamination of Resources • Perceived Pollutants In the Environment • Availability of Resources	***MNO Comment:*** White-tailed deer is among the site-specific interests that MNO has communicated to Bruce Power: this is mentioned in Section 1.3.3.2 of this ERA. Nonetheless, white-tailed deer was not selected as a VC and instead meadow vole is selected as a proxy. Further, there is no mention of the MNO VCs, namely Métis Lands, Resources & Water and Métis Nationhood. We request that Bruce Power consider MNO VCs as part of regulatory filings. ***BP Response:*** White-tailed deer was considered in the EcoRA for non-radiological COPCs through the risk assessment of the meadow vole. Similar to the white-tailed deer the meadow vole is also a herbivorous mammal documented on site, however it has a higher exposure rate (because of its higher food ingestion rate and smaller home range) and therefore potentially higher risk. Since the outcome of the assessment resulted in the meadow vole having a low risk to non-radiological COPCs, deer would also have a low risk. White-tail deer was directly assessed as a receptor in the EcoRA for radiological COPCs. Actual samples of deer meat taken from Site were used in the exposure assessment, and the results found that the exposure ratio (0.005%) was substantially less than the benchmark value. Therefore there was no radiological risk to deer from normal operations on the Site.
37	**5.1.3.2 Screening of Chemicals in Air** "There is no complete exposure pathway for ecological receptors with respect to air and as such, air was not considered further in the EcoRA."	163 of 459	• **Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Lack of Use of Land or Water in Proximity to the	***MNO Comment:*** The ecological risk assessment did not consider effects to Métis from perceived contamination or environmental pollutants. Métis rights and interests straddle the ecological risk and human health assessments. It should have been considered in both assessments; instead, it was considered in neither.

#	Section	Page	MNO VCs	Comment
			Project • Perceived Contamination of Resources • Perceived Pollutants In the Environment	***BP Response:*** Bruce Power has committed to discussing specific Metis insights into the MNO valued species in order to properly and thoughtfully incorporate such elements into the broader environmental monitoring program and future assessments. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area.
38	**5.1.5 Ecological Conceptual Model** "In addition to COPCs exposure, ecological receptors may be affected by the Site via physical stressors (i.e., noise, thermal plume, entrainment and impingement, bird strikes and vehicle-wildlife collisons). In addition to direct physical disruption (i.e., removal) of wildlife habitat, the Site could effect wildlife by a decreasing wildlife habitat quality through an increase in ambient noise levels (atmospheric environment) and increasing temperature of water in the vicinity of the discharge points (waterborne effluent). As well, infrastructure and traffic associated with the Site present a potential source of direct mortality through bird strikes and wildlife-vehicles collisions."	183 of 459	**Metis Lands, Resources & Water** • Lack of Use of Land or Water in Proximity to the Project	***MNO Comment:*** The MNO was not considered as a receptor for noise. This is problematic as Métis harvesters near the Project would be affected by noise. Furthermore, the HHRA did not consider perceptive effects related to noise as a physical stressor to MNO Citizens. ***BP Response:*** Bruce Power is willing to have further dialogue on this topic with the MNO.
39	**5.2.3 Chemical-Specific Factors** "Given that site-specific measured concentrations of chemicals in dietary items are not available, uptake equations determined in laboratory studies were used to estimate chemical uptake into dietary items consumed by wildlife (e.g., uptake of chemicals in soil into terrestrial plants). There is a high degree of uncertainty when using modelled data given that these uptake equations do not take site-specific conditions into account. These equations are considered to provide reasonable estimates of tissue concentrations to use in the EcoRA."	195 of 459		***MNO Comment:*** Without site-specific samplings of the concentrations of chemicals in dietary items, it is unclear how the uncertainty is addressed. This does not instill confidence in the conclusion that the concentrations of chemicals do not result in adverse health effects. ***BP Response:*** Section 5.2.6 discusses the uncertainties and assumptions in the exposure assessment and states "Given that site-specific concentrations of chemicals in dietary items were not available, uptake equations from the literature were used. However, these equations are based upon using relatively bioavailable forms of metals and as such, would be expected to overestimate uptake into dietary items when obtained from areas where impacts would expected to be aged and weathered and more tightly adsorbed to

#	Section	Page	MNO VCs	Comment
				environmental media. As a result, the concentrations estimated in dietary items are likely overestimated." This results in a conservative assessment, and thus site-specific samplings are likely to result in a lower exposure.
40	**5.3.1 Effects Research** "Bruce Power has been working with independent university researchers from 2011 to current to understand more about Lake Whitefish and Round Whitefish in Lake Huron, and in particular how site operations might affect these species. As introduced in Section 2.2.7.7, Bruce Power and SON came together to identify areas of interest which included population discrimination, population modelling, entrainment and impingement effects, thermal effects and combined stressors. SON partnered with researchers at the University of Guelph and Bruce Power partnered with researchers at the University of McMaster and University of Regina to carry out research studies that would address these areas of interest."	202 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Availability of Resources **Metis Nationhood** • Participation in Community Events • Perception of Change in Key Components of Metis Identity • Actual Opportunities for Business / Contractors • Perceived Opportunities for Business / Contractors	***MNO Comment:*** The EcoRA focuses on the Lake Huron Commercial fishery, specifically Lake Whitefish and Round Whitefish and doesn't evaluate risks to important MNO fish species. While the Lake Huron Commercial fishery is important to the MNO, Impingent & Entrainment monitoring suggests that Bruce Power operations through the relicensing horizon will impact MNO VCs and important MNO-harvested fish species. Excluding reptiles and amphibians based on absence of data does not consider MNO Valued Components, rights and interests. Absence of data is not an appropriate rationale for excluding valued components from the Risk Assessment. It is the purpose of baseline studies to fill these gaps where they exist and failure to complete a baseline study of reptiles and amphibians has the potential to omit from the study species of concern and traditional value to the MNO.
41	**5.3.1.3 Effects of Entrainment and Impingement** "An extensive analysis of the effects of entrainment and impingement on Lake Whitefish was completed. An environmental consulting firm conducted monitoring for two years at the Bruce A intake, including larval tows in the vicinity of the intake. Two years of data was analyzed to estimate the cumulative impact (scaled using actual flow volumes for the entire year and a Bayesian model) of entrainment and impingement of Lake Whitefish at Bruce Power relative to the commercial fishing quota."	204 of 459		
42	**5.3.1.4 Thermal Effects** "Prior to the initiation of the research program, the effects of warmer temperatures on incubating Lake Whitefish and Round Whitefish embryos was not fully understood. Several publications provided evidence that warmer temperature decreased the time-to-hatch and increased the probability of embryo mortality, however, results appeared to be dependent on the incubation techniques and/or the source of Lake White embryos. A detailed study indicated that Lake Whitefish embryos nonetheless were able to withstand cyclic heat shocks of up to 7°C for 6-			

#	Section	Page	MNO VCs	Comment
	hours each day throughout development, with virtually no impact on survival, although hatch could occur up to several weeks earlier than when incubated at 0°C. Bruce Power has funded extensive research into the impacts of thermal and combined thermal, radiological and chemical stressors on developing Lake Whitefish and Round Whitefish embryos. As the egg stage is the most sensitive to temperature variation (they are sedentary and generally remain in one location) effects during this critical life stage was examined. This has included examining stressor effects on cellular responses and growth, development and survival."			
43	**5.3.1.5 Combined Stressors** "The research program was completed to understand how stress from a combination of radiation, temperature increases and chemicals (i.e., morpholine) would affect Lake Whitefish. The research looked at how stress from these three sources affected Lake Whitefish. Results from the combined stressor research showed that effects from morpholine and gamma radiation occurred only at levels substantially higher than those experienced at the Site."	205 of 459		***BP Response:*** Males and females are equally susceptible to entrainment and impingement. The results of the Lake Huron water quality samples collected in 2016 and 2017 do not indicate the presence of any contaminants above water quality guidelines which are set to be protective of aquatic life. Thus there is no indication that there is an effect on sex ratios. Monitoring of lake water quality and physical stressors will continue through ongoing Bruce Power Environmental Monitoring Programs. Reptiles and amphibians were not excluded, however it was challenging to quantitatively evaluate the risks posed by chemicals as there is a general lack of data. Section 5.1.4.3 explains the exposure pathways for reptiles and amphibians. There is a general lack of ecotoxicology and exposure related information needed to assess exposure and risk to reptiles and amphibians from all exposure pathways. This is consistent with the information provided by the MOECC. The MOECC indicates that reptiles and amphibians were not included in the development of the generic standards because there is currently not enough information to evaluate exposure and risk. Additionally, the U.S. EPA also states that insufficient information is available to evaluate reptiles and amphibians. Section 5.3.1 is summarizing the effects research, which is work completed by independent third parties. Section 5.4.5.1 quantifies
44	**5.3.3 Thermal Benchmarks** "The critical thermal maximum (CTM) method is currently the preferred method of choice for obtaining acute toxicity conditions and is used in this risk assessment [257]. It is defined as the point at which locomotary movement becomes disorganized and the animal loses its ability to escape from conditions that may ultimately lead to its death (Environment Canada 2016). The avoidance criteria were also considered for each fish species and life stage. The upper avoidance temperature (T upper) is defined as the temperature at which the fish will tend to avoid, or where other effects become apparent. This can be compared to the preferred temperature (T pref), which is the typical temperature within the range of temperatures that the fish species prefers [284]."	228 of 459		
45	**5.3.5 Fish Entrainment and Impingement** "The cumulative (Bruce A and Bruce B) effects threshold specific to Lake	233 of 459		

#	Section	Page	MNO VCs	Comment
	Whitefish is 10% of the MNRF quota for Zone 1 (i.e., harvest stock). This is reasonable in comparison to the much larger inter-annual variation in harvest. Deepwater Sculpin were identified as a VEC, based on their conservation status (Table 12)"			the loss of Lake Whitefish by impingement and entrainment and shows that this amount is less than 1% of commercial harvest in Zone 1. Thermal effects on whitefish are discussed in detail in Section 5.4.3. This work looked at combined stressors and found that levels substantially higher than those experienced at the Site are needed to show an effect. For a more detailed explanation of the Whitefish Research, see Supplement 5 of the Relicencing material. This effect threshold was part of the Environmental Assessment Follow-up Monitoring Program. ***MNO Response:*** BP's response does not consider MNO VCs and important MNO-harvested fish species.
46	**5.3.4 Noise benchmarks** "No benchmarks are available from federal or provincial regulatory agencies, including the U.S. EPA, and the scientific literature focusses on behavioural adaptations to elevated noise levels (e.g., avoidance) rather than health effects. As a result, noise effects to wildlife were not quantitatively assessed. **5.4.4 Noise Effects** Due to a lack of benchmarks, noise effects on wildlife cannot be	233, 256 of 459		***MNO Comment:*** Métis harvesters are also potential receptors due to changes in perception based on noise. When regulatory standards are not readily available, one alternative approach would be to base impact predictions on a maximum allowable effects level. As stated in Section 4.1.2.8 of the October ERA, "the sound levels of the Bruce Power facility comply with the applicable MOECC night-time noise limit".

#	Section	Page	MNO VCs	Comment
	assessed.”			***BP Response:*** Bruce Power will work with MNO to understand this potential affect to MNO citizens more specifically.
47	**5.4.2 Discussion of Chemical Effects** **5.4.2.2 Mammals and Birds** “Semi-Aquatic Mammals and Birds in Stream C The water shrew had an estimated HQ of 3 for aluminum, largely due to incidental ingestion of sediment. Therefore, assuming the water shrew consumed 4.7% of its diet as sediment, and that sediment contains the average concentration of aluminum throughout its lifetime, there is a slightly elevated risk for this receptor. However, given that only two sediment samples have been collected from Stream C within the Site (one sample collected in 2009 and one in 2016), the risks associated with these limited data are uncertain.”	241 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Contamination of Resources • Perceived Pollutants In the Environment	***MNO Comment:*** Characterizing the sediment quality in Stream C and other surface water features representing aquatic habitats or potential aquatic habitats will allow evaluation of the environmental risks associated with chemical effects associated with exposure to sediment on and around the Site. We recommend that Bruce Power should: • Undertake a study to characterize the sediment quality in Stream C and other surface water features at and around the Site. ***BP Response:*** Sediment quality in Stream C (and other locations) was collected in 2009 and 2016 as reported in Section 5.3.2.3 of the October ERA. Sediment monitoring will continue as part of the ongoing Bruce Power Environmental Monitoring Program. ***MNO Response:*** Section 5.4.2.2 indicates that the risks associated with the limited sediment sampling data remain uncertain. Evaluation of the risks associated with sediment in Stream C should be incorporated into the Bruce Power Environmental Monitoring Program.

#	Section	Page	MNO VCs	Comment
48	**5.4.2.3 Aquatic Life** "Hazard quotients for mercury were greater than 1 in two locations, Off Douglas Point and Off Bruce B. Hazard quotients were less than one during the May 2007 sampling event and slightly greater than one during the June 2007 sampling event (HQs of 1.3 for both sampling locations). Mercury concentrations were below the detection limit (<0.1 µg/L) during the October 2007 sampling event, and HQs based on the detection limit were less than one. Given that the most recent sampling event (in 2016) did not yield mercury concentrations above the benchmark (toxicological benchmark = 0.23 µg/L and measured concentration = 0.10 µg/L), risks to aquatic life from mercury in surface water are considered negligible. However, this should be confirmed with the collection of more recent surface water samples Off Douglas Point Hazard quotients for barium and strontium could not be calculated because there are no TRVs available for these COPCs in sediment. However, the U.S. EPA [151] provides an average concentration of barium of <20 mg/kg in sediments for non-polluted Great Lakes. This value is intended to be used to determine whether elevated levels of barium are present at a site. The maximum measured concentration of barium of 4.6 mg/kg is well below the value of <20 mg/kg. Barium in sediment is considered to pose negligible risk to aquatic life. Given the lack of toxicity data for strontium in sediments and the lack of information on typical background levels in Ontario lakes, it cannot be determined whether strontium poses a potential risk to aquatic life. This could be determined through the collection of background sediment samples and comparison of measured strontium concentrations on-site to the background concentrations."	244 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Contamination of Resources • Perceived Pollutants In the Environment	***MNO Comment:*** Characterizing the surface water quality at and around the site will allow for a complete evaluation of the risk to aquatic life for exposure to the COPCs. We recommend that Bruce Power should: • Undertake a study to characterize the surface water quality at and around the Site. ***BP Response:*** Surface water quality was measured at multiple locations as discussed in Section 5.3.2.3 of the October ERA. Bruce Power will continue water quality monitoring as part of the ongoing Bruce Power Environmental Monitoring Program. ***MNO Response:*** The scope of the Bruce Power Environmental Monitoring Program should include detailed characterization of the surface water quality at and around the site in addition to monitoring concentration of established "indicator" compounds.

#	Section	Page	MNO VCs	Comment
49	**5.4.3 Thermal Effects** "… The PQRA identified the potential for an increased risk to Lake and Round Whitefish eggs and a detailed quantitative risk assessment (DQRA) was undertaken."	252 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Availability of Resources	***MNO Comment:*** The assessment of thermal effects on local fish populations focuses on spawning and avoidance and is silent on risks to aquatic habitat and the cumulative impacts associated with changes to water temperatures. In addition to quantifying the thermal impact on MNO Fish Species of Interest, changes to aquatic habitat and cumulative impacts associated with changes to water temperature will influence the MNO VCs and must be addressed. Lastly, MNO should request a copy of the DQRA (detailed quantitative risk assessment) report. ***BP Response:*** Changes to aquatic habitat are not evident given the multiple years of consecutive monitoring completed. Monitoring will continue as part of the ongoing Bruce Power Environmental Monitoring Program. A cumulative effects assessment is also ongoing. The DQRA begins on page 252 of the October ERA. The results show that temperatures are less than the benchmark. The constant temperatures measured outside the facility are less than 8°C. The lake temperature monitoring during three years of study has demonstrated that the temperatures nearest the discharge channels are within the survival range for whitefish (0.5 to 6°C) and risk to Lake Whitefish is low.
50	**5.4.3.1 Thermal Environmental Compliance Approval** "In recent years, increasing summer air and lake temperatures have necessitated occasional issuance of a Section 61 Direction under the Ontario Water Resources Act to permit temporary alteration of the daily-average summer cooling water effluent temperature limit of 32.2□C in order to safeguard ongoing power production and delivery to the provincial grid during high energy-consumption periods. Three Section 61 directives have been received since 2005 and one temporary		**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Contamination of	***MNO Comment:*** Impacts to the aquatic environment associated with discharge of cooling water higher than the approved thermal limits under Section 61 of the Ontario Water Resources Act have not been quantified. The frequency of increased summer air and lake temperature events is likely to increase over the license renewal horizon. The independent research on the Lake Huron Whitefish population

#	Section	Page	MNO VCs	Comment
	amendment was in place in 2006 and 2007 again for 2013-2015 and 2016-2017."		Resources • Perceived Pollutants In the Environment • Availability of Resources **Metis Nationhood** • Perception of Change in Key Components of Metis Identity • Perceived Opportunities for Business / Contractors	indicate that: *Lake Whitefish is a cold-water, benthic-oriented fish species that typically occupies deeper cold water during spring, summer and fall. Lake Whitefish spawn in late fall and hatch following ice breakup in mid-April. Mature Lake Whitefish continue to occupy shallow near-shore water for feeding throughout the winter.* *Round Whitefish are also cold-water benthic-orientated fish found in freshwater lakes at depths of 6-36 m. Spawning occurs on cobble substrate in late November and early December, with hatch occurring early to mid-April depending on temperature conditions. Round Whitefish larvae remain close to the bottom after hatching and occupy depths of 3-7 m.* *No local genetic or ecological populations of Lake Whitefish or Round Whitefish have been identified in the area near Bruce Power. The Lake Whitefish and Round Whitefish in the area surrounding Bruce Power belong to genetic and ecological groups that encompass large parts of Lake Huron* This suggests that isolated releases of cooling water with elevated temperatures are expected to have little to no impact of the Lake Huron Commercial Whitefish Fishery. These results cannot be extrapolated to the cool- and warm-water fish species or localized fish communities in Baie du Dore and the waters around Bruce Power, including MNO Fish Species of Interest. These must be separately characterized to properly understand effects on MNO interests. Additionally, the cumulative effect of Bruce Power's thermal emissions coupled with rising lake temperatures, other thermal influences and nutrient (i.e. phosphorus) loading is expected to impact aquatic habitat(s) for mammals, reptiles, amphibians and fish. These factors must be considered in the context of cumulative effects. ***BP Response:***

#	Section	Page	MNO VCs	Comment
				Section 61 Direction is for short durations; more detail is provided in the temporary ECA materials shared with the MNO. As stated, Lake Whitefish is a cold water species and thus has less tolerance to warmer temperatures than cool and warm water fish. Cold, cool and warm water fish were considered in Section 5.4.3 of the October ERA. ***MNO Response:*** BP's response does not consider cool- and warm-water fish species or localized fish communities in Baie du Dore and the waters around Bruce Power, including MNO Fish Species of Interest or the cumulative effect of Bruce Power's thermal emissions in the context of rising lake temperatures.

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<td>51</td>
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5.4.5 Fish Entrainment and Impingement

“Bruce A and Bruce B have dedicated intakes from Lake Huron, which largely supply water for the CCW system (Figure 2). A third, low-volume water intake (located 820 m offshore at a depth of 15 m) currently supplies the Bruce Eco-Industrial Centre and a firewater system. Withdrawal rate for this intake is very low (2013/2014 average of 0.037 m 3 /s) and it is recognized that a low approach velocity (28 cm/hr) results in no fish impingement. Entrainment and impingement design and mitigation has been optimized to limit effects to fish in Lake Huron.

Fish baskets are monitored for debris (fish and other lake debris) loading on a daily basis at Bruce A and Bruce B through routines (documentation of debris in the fish basket completed by station Operators) performed in each unit. If debris loading is high then the routine is completed more frequently.”

Table 47: Number of Individuals of Each Type of Fish Impinged By Station in 2016
<table>
<tr><th>Species Name</th><th>Bruce A</th><th>Bruce B</th><th>Total</th></tr>
<tr><td>Alewife</td><td>1</td><td>65</td><td>66</td></tr>
<tr><td>Brown Trout</td><td>3</td><td>7</td><td>10</td></tr>
<tr><td>Bullhead</td><td>11</td><td>0</td><td>11</td></tr>
<tr><td>Burbot/Ling</td><td>59</td><td>195</td><td>254</td></tr>
<tr><td>Carp</td><td>3</td><td>16</td><td>19</td></tr>
</table>
</td>
<td>257 of 459</td>
<td>
Metis Lands, Resources & Water

• Availability of Resources
</td>
<td>
MNO Comment:

DQRA was not identified in terms of assessing fish entrainment and impingement as suggested in Section 1.1.

Table 47 suggests that impingement mitigation measures are less effective for some MNO Fish Species of Interest. For example, Yellow Perch represents 24% of the total number of fish impinged because of Bruce Power operations in 2016.

Improvements to Entrainment and Impingements design and mitigation measures would reduce impacts to MNO Fish Species of Interest, traditional uses and harvest rights.

We recommend that Bruce Power should:

• Evaluate options for improving Entrainment and Impingement mitigation measure specifically related to MNO Fish Species of Interest; and

• Implement additional mitigation measures to improve the fish Entrainment and Impingement mitigation for MNO Fish Species of Interest.
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#	Section	Page	MNO VCs	Comment
	Channel Catfish 7 10 17 Chinook Salmon 3 7 10 Coho Salmon 0 6 6 Emerald Shiner 1 25 26 Freshwater Drum 7 13 20 Gizzard Shad 286 356 642 Lake Chub 0 1 1 Lake Trout 15 52 67 Lake Whitefish 26 45 71 Longnose Sucker 68 426 494 Rainbow Smelt 196 938 1134 Rainbow Trout 8 16 24 Redhorse Sucker 3 126 129 Rock Bass 16 2 18 Round Goby 446 2296 2742 Round Whitefish 2 1 3 Shiner 2 0 2 Silver Bass 0 1 1 Smallmouth Bass 3 13 16 Three Spine Stickleback 5 0 5 Unknown 29 5 34 Walleye 5 25 30 White Perch 14 12 26 White Sucker 9 91 100 Yellow Perch 232 1611 1843 Total 1460 6361 7821			***BP Response:*** A detailed quantitative analysis was conducted to quantify the impingement and entrainment losses and is provided in Section 5.4.5. A review of mitigation measures was in the May 2017 DFO Application. This is in the process of being updated.
52	**5.4.5.1 DFO Authorization** "Memorandum of Understanding (MOU) between CNSC and DFO with respect to the authorization requirements under the amended Fisheries Act …. Based on the information provided by the Indigenous communities and where active dialogue exists, Bruce Power is making best efforts to determine the impact of entrainment and impingement fish losses on the Indigenous fishery. "Bruce Power sees this as newly imposed administrative process to simply document existing compliance as nothing has changed in our operations which continue to have no significant adverse impact on the environment. There are no significant adverse environmental effects because adequate measures have already been taken in the original	260 of 459	**Metis Lands, Resources & Water** • Availability of Resources	***MNO Comment:*** DFO authorization remains unresolved. Bruce Power's perspective that the DFO authorization is an administrative process to document existing compliance seems to be based on previous Environmental Risk Assessment work and monitoring that focuses on the Lake Huron Commercial Fishery. MNO harvesting and fisheries including the list of MNO Fish Species of Interest provided to Bruce Power through ongoing dialogue should be incorporated in to the evaluation of the nature and extent of the impact on the environment.

#	Section	Page	MNO VCs	Comment
	design and through ongoing activities. Adequate provisions have been made for the protection of fish. The company has conducted several environmental assessments and is conducting ongoing monitoring that continues to support this conclusion.”			***BP Response:*** Bruce Power will continue to discuss fish species of interest with the MNO and information will be updated as it is available in future iterations of the ERA.
53	**5.4.5.1 DFO Authorization** Context to Lake Huron – Aboriginal Putting the losses of fish that occur as a result of Bruce Power operations into context with the Aboriginal fishery is not possible at this time. There are no data available on the Indigenous harvests that can be used to make a meaningful comparison to the amount of fish lost at the Site. A list of fish species with the potential to be entrained or impinged that are important to the HSM and MNO are presented in Table 51 and Table 52, respectively. Values have been updated to include the addition of apportioning previously unidentified individuals to a species and eliminating the 25 mm size cutoff for entrainment. **Table 52: Fish Identified as Important to the Metis Nation of Ontario** **SPECIES** | **Total Entrainment and Impingement (age-1 equivalent kg)**	268 of 459	**Metis Lands, Resources & Water** • Availability of Resources	***MNO Comment:*** Why is there a significant increase in the amount of impingement of Chinook Salmon from 163 kg in 2013 to 268 kg in 2014. Is there more recent data on the fish entrainment and impingement? Please advise. In the absence of available data on Metis fisheries harvests, some form of benchmarking exercise will be needed to evaluate the extent of the impact of Bruce Power’s ongoing operation on MNO harvesting and fisheries including MNO Fish Species of Interest. Any benchmarking exercise should incorporate MNO traditional knowledge in an effort to characterize the traditional fishery and Metis rights and interests.

#	Section	Page	MNO VCs	Comment
	<table><tr><th></th><th>2013</th><th>2014</th><th>Average</th></tr><tr><td>Chinook Salmon</td><td>163</td><td>268</td><td>216</td></tr><tr><td>Coho Salmon</td><td>2</td><td>5</td><td>4</td></tr><tr><td>Lake Trout</td><td>3</td><td>5</td><td>4</td></tr><tr><td>Whitefish and other Coregonids</td><td>664</td><td>134</td><td>399</td></tr><tr><td>Pike</td><td><1</td><td><1</td><td><1</td></tr><tr><td>Rainbow Trout</td><td>4</td><td>4</td><td>4</td></tr><tr><td>Smallmouth Bass</td><td>1</td><td>1</td><td>1</td></tr><tr><td>Walleye</td><td>32</td><td>44</td><td>38</td></tr><tr><td>White Bass</td><td>1</td><td>1</td><td>1</td></tr><tr><td>Yellow Perch</td><td>125</td><td>24</td><td>75</td></tr><tr><td>Cisco</td><td>539</td><td>149</td><td>344</td></tr><tr><td>Rainbow Smelt</td><td>161</td><td>43</td><td>102</td></tr><tr><td>Round Whitefish</td><td>2</td><td>1</td><td>2</td></tr><tr><td>Suckers</td><td>33</td><td>38</td><td>36</td></tr></table>			***BP Response:*** These were entrained chinook, the life history parameters are not based on a lot of data and as such result in big numbers. There is an opportunity to include questions related to chinook salmon in the Metis specific diet survey.
54	**5.4.6.1 Deer Interactions with Traffic** "Increased traffic during the large construction projects on site (i.e., refurbishment, outages and MCR) may result in increased vehicle strikes with white-tailed deer."	269 of 459	**Metis Lands, Resources & Water** • Lack of Use of Land or Water in Proximity to the Project • Availability of Resources	***MNO Comment:*** As noted in the above comments, the MCR will involve various construction activities. We recommend that mitigation measures and monitoring are developed and implemented to reduce the potential impact to the white-tailed deer as they are species of importance to the MNO. ***BP Response:*** White-tailed deer and their interactions with activities during prior refurbishment activities were monitored, with a focus on increased traffic and collisions with deer. Comparison of refurbishment to operations phase showed that there was not an increase in deer collisions during periods of increased traffic.
55	**5.4.8.1 Mammals and Birds** "However, there were HQs greater than 10 estimated at Construction Landfill #4 (di-n-butyl phthalate) and the Fire Training Facility (hexachlorobenzene) that may be associated with some effects to ecological receptors."	275 of 459		***MNO Comment:*** Given the estimated high HQ value and its effects to the ecological receptors, we recommend that additional study and uncertainty analysis be undertaken to characterize the risks of chemical effects associated with exposure to ecological receptors.

#	Section	Page	MNO VCs	Comment
				BP Response: These areas will continue to be monitored as part of the ongoing Bruce Power environmental monitoring program and will be reassessed as part of the continual cycle of risk assessment.
56	**5.4.9 Cumulative Effects in the Ecological Risk Assessment** "The environmental assessment carried out for the proposed DGR included an assessment of changes to the chemical quality in vegetation; these changes were estimated to be negligible based upon the atmospheric emissions from the proposed project. Additionally, there were no releases to surface water predicted for the DGR. As a result, the cumulative contribution of the DGR to potential ecological risks at the Site are considered to be negligible."	277 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Lack of Use of Land or Water in Proximity to the Project • Perceived Contamination of Resources • Perceived Pollutants In the Environment • Availability of Resources **Metis Nationhood** • Participation in Community Events • Perception of Change in Key Components of	***MNO Comment:*** The cumulative effects assessment is largely superficial and does not follow the standard steps. There is no characterization of the residual effects and no determination of significance of those effects. In the Project region where various facilities are expected to operate in the coming years, namely Bruce A and B, Bruce Power's WWMF, OPG's proposed DGR (and potentially a high level waste facility), CNL and Hydro One transmission infrastructure, potential cumulative effects of a synergistic and additive nature are expected. We suggest it is prudent to consider doing a regional cumulative effects study which is effects-based and allows for questions of a broader nature related to ecological thresholds and synergistic effects. Instead of doing "one-off" and disconnected cumulative effects assessments for each individual project and focusing on its localized stressors, we recommend that, going forward, regional assessments to evaluate and manage cumulative effects and to identify the potential impacts on the MNO rights and interests should be developed and implemented to inform project assessment in a wholistic manner. Further, this regional assessment can be undertaken in a collaborative process with the MNO representatives enabled by an integration of traditional knowledge, science and evidence.

#	Section	Page	MNO VCs	Comment
			Metis Identity • Increase or Decrease in Metis Citizens Knowledge Transfer	***BP Response:*** A cumulative effects assessment is currently ongoing.
				MNO Response: We suggest that Bruce Power seek MNO input in doing the cumulative effects assessment and share the results with MNO.

#	Section	Page	MNO VCs	Comment
57	**5.4.10 Overall Conclusions of the Ecological Risk Assessment** "… • Risks for aquatic life due to chemicals in surface water and sediment were negligible however additional sampling may be required to confirm this. … • In fish impingement studies conducted in 2016, a total of 7,821 fish were collected from both Bruce A and Bruce B. This included 71 Lake Whitefish, 3 Round Whitefish, 2 Spottail Shiner, and 0 Deepwater Sculpin. The total number of fish impinged at Bruce A for 2016 is lower than over the last three years (2013, 2014 & 2015). Higher numbers in 2014 are due to a higher volume of gizzard shad (74% of total in 2014). The total number of fish impinged at Bruce B is also similar to that seen in 2012, 2014 and 2015 but lower than 2013 and 2011. … • In fish entrainment studies conducted in 2013 and 2014, a total of 1,496 individuals were collected including Lake Whitefish, Burbot and Round Goby. All were scaled to age-1 equivalent biomass, resulting in an annual average biomass of 1,977 kg of age-1	278 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Contamination of Resources • Perceived Pollutants In the Environment • Availability of Resources	***MNO Comment:*** The October 2017 Bruce Power Environmental Quantitative Risk Assessment builds on previous environmental risk assessment and environmental monitoring technical work that was scoped prior to meaningful consultation with the MNO. The overall conclusions of the Ecological Risk Assessment focus on the Lake Huron Commercial fishery represented by Lake Whitefish and Round Whitefish. The Scope of the Ecological Risk Assessment could be expanded to consider MNO rights and interests including traditional uses.

#	Section	Page	MNO VCs	Comment
	equivalent fish for entrainment. … • Impingement and entrainment annual average biomass of age-1 equivalents was 2,414 kg. The amount of Lake Whitefish impinged and entrained during site operations in 2013 and 2014 (986 kg and 443 kg using the Foregone Fishery Yield Model) was less than 1% (0.3–0.5%) of the commercial harvest in Zone 1. … • Given the conservative benchmarks, multiple years of data collection and the resulting hazard quotients, it is concluded that thermal effluent causes little to no risk to fish. Further analyses were done on whitefish to incorporate updated benchmarks from recent research and to further support the finding of little to no risk. The results of the DQRA showed that the average temperature values for the three winters studied were less than or equal to the 8°C benchmark for being protective for Round Whitefish, except in Baie du Doré; however, suitable spawning cobble is limited in Baie du Doré. Maximum temperatures at all temperature monitoring sites were higher in the first and last time windows (December and April), likely due to natural fall and spring lake turnover. The maximum temperatures measured were less than 8°C in winter (except in Baie du Doré). Temperatures nearest the discharge channels were within the survival range for whitefish (0.5 to 6°C) and risk to this species is low." … • Impingement and entrainment annual average biomass of age-1 equivalents was 2,414 kg. The amount of Lake Whitefish impinged and entrained during site operations in 2013 and 2014 (986 kg and 443 kg using the Foregone Fishery Yield Model) was less than 1% (0.3–0.5%) of the commercial harvest in Zone 1. … • Given the conservative benchmarks, multiple years of data collection and the resulting hazard quotients, it is concluded that thermal effluent causes little to no risk to fish. Further analyses were done on whitefish to incorporate updated benchmarks from recent research and to further support the finding of little to no risk. The results of the DQRA showed that the average temperature values for the three winters studied were less than or equal to the 8°C benchmark for being protective for Round Whitefish, except in Baie du Doré; however, suitable spawning cobble is limited in Baie du Doré. Maximum temperatures at all temperature monitoring sites were higher in the first and last time windows (December and April), likely due to natural fall and spring lake turnover. The maximum temperatures measured were less than 8°C in winter (except in Baie du Doré). Temperatures nearest the discharge channels were within the survival range for whitefish (0.5 to 6°C) and risk to this species is low."			***BP Response:*** Bruce Power remains committed to having further dialogue with the MNO on this.
58	**6. Radiological Human Health Risk Assessment** **6.2.2 Receptor Characteristics and Exposure Scenarios** "In 2016, a site survey was performed to gather water usage and dietary intake information for the residents within 10 km of the Site. The results of that survey define the following local intake fractions for each receptor category:	291 of 459	**Metis Lands, Resources & Water** • Perceived Contamination of Resources • Perceived Pollutants In	***MNO Comment:*** No direct diet survey has been completed with MNO citizens. Without specific information from Métis and without consideration of Métis as a potential receptor, this assessment lacks important information. Bruce Power should seek MNO input by way of developing and completing an MNO specific diet survey.

#	Section	Page	MNO VCs	Comment
	• Fraction of locally obtained water (municipal/private well/community well) used for drinking, bathing, gardening and sanitation; • Fraction of locally grown fruits and vegetables consumed; • Fraction of locally raised livestock/eggs/milk/deer consumed; and • Fraction of locally caught fish consumed. These fractions were entered into the IMPACT model; they are listed in Appendix D of the 2016 Site Specific Survey Report for the Bruce Power Site."		the Environment • Availability of Resources	***BP Response:*** Bruce Power will work with MNO to develop and disseminate a survey specific to its members. Dose calculation tools require specific inputs and thus questions will need to provide answers that can then be used in the dose calculation tool.
59	**6.2.2 Receptor Characteristics and Exposure Scenarios** "All other receptor characteristics, including but not limited to the following, were derived from CSA Standard N288.1-14 Update No. 1: • Human ingestion rates for terrestrial plants, aquatic animals and plants, and water; • Inhalation rates for air; • Exposure fractions (e.g., outdoor air, soil, lake sediment); • All wildlife (terrestrial and aquatic) input and exposure fractions; and • Physical and hydrological characteristics of wells and bodies of water."	291 of 459	**Metis Lands, Resources & Water** • Perceived Contamination of Resources • Perceived Pollutants In the Environment • Availability of Resources	***MNO Comment:*** As previously stated, CSA standards are not designed to consider Métis rights and interests. On that basis, Métis-specific VCs and rights and interests are left out in the consideration. Métis-specific VCs and rights and interests straddle the ecological risk and human health risk assessment. However, Métis VCs were considered in neither. ***BP Response:*** Bruce Power is willing to continue dialogue on this. Based on the confidential nature of information Bruce Power wanted to respect the wishes of the MNO and not include references in the ERA or PEA, as information referenced becomes subject to Access to Information Requests. Bruce Power has committed to discussing specific Metis insights into the MNO valued species in order to properly and thoughtfully incorporate such elements into the broader environmental monitoring program and future assessments. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area. ***MNO Response:*** As noted earlier, information provided in the VC Report can be reasonably used to inform the Project impacts assessment and mitigation. MNO looks forward to further discussions to ensure MNO information is incorporated while respecting confidentiality concerns.

#	Section	Page	MNO VCs	Comment
60	**6.2.6 Uncertainties and Assumptions in the Exposure Assessment** "Dietary characteristics for the generic hunter/fisherman group (e.g. intake rates and locations for wild game and fish) For the hunter/fisherman receptor, which is representative of Indigenous Peoples, intake rates for wild game and fish were assumed to be average values from the First Nations Food, Nutrition and Environmental Study. It was also assumed that all wild game and fish were caught in the area near their residence, which is approximately 20 km north of the Site. The most significant uncertainty is the location of the catch. Since the majority of the dose is attributed to terrestrial animals and plants (e.g., deer) and aquatic animals (e.g., fish), if a substantial portion of the wild game and fish consumed is caught closer to the Site, the doses to the hunter/fisherman would be underestimated in this ERA."	300 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Lack of Use of Land or Water in Proximity to the Project • Perceived Contamination of Resources • Perceived Pollutants In the Environment • Availability of Resources	***MNO Comment:*** A hunter/fisherman's dietary consumption may not be appropriate to represent MNO Citizens' as it may underestimate exposure to radiological contaminants for the MNO Citizens who are mobile and both live and harvest in and around the Project vicinity. This mobility could lead to potential dose exposure which is higher than a generic hunter/fisher. First Nation and Metis harvesters should have been identified as distinct receptor groups. The assumptions outlined here are in relation to a First Nation community 20km north of the project site. These assumptions are not the same for MNO Citizens. To that end, we recommend that an MNO diet study be completed to understand MNO Citizens' dietary habit and consumption to ensure the potential radiological effects to the MNO Citizens are properly assessed. Similarly, an assessment of avoidance of whitefish based on perceived contaminants must be considered because perceptions may lead to dietary changes that either reduce diet quality or increase diet cost. ***BP Response:*** Bruce Power will work with MNO to develop and disseminate a survey specific to its members. Dose calculation tools require specific inputs and thus questions will need to provide answers that can then be used in the dose calculation tool.
61	**6.3.2 Uncertainties and Assumptions in the Toxicity Assessment** "While there may be a large degree of uncertainty in the annual dose of 1 mSv being the threshold for meaningful health effects, it is a well	302 of 459	**Metis Lands, Resources & Water** • Lack of Use of Land or Water in Proximity to	***MNO Comment*** There is no discussion in this, or subsequent sections, about increased avoidance behaviors due to perception of exposure to radiation dosage.

#	Section	Page	MNO VCs	Comment
	establish regulatory dose limit and therefore uncertainties in the toxicity assessment are not considered."		the Project • Perceived Contamination of Resources • Perceived Pollutants In the Environment •	***BP Response:*** Bruce Power remains committed to having further dialogue with the MNO on this.
62	**6.4.1.1 Estimated Health Risks for Radionuclides** ~All~	302 of 459	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Contamination of Resources • Perceived Pollutants In the Environment	***MNO Comment:*** There is no section in either the human health assessment or in the ecological assessment which considers the radiological impacts on Métis harvesters' health or their perception of potential contaminants or pollutants on their food sources.
				BP Response: Bruce Power has committed to discussing specific Metis insights into the MNO valued species in order to properly and thoughtfully incorporate such elements into the broader environmental monitoring program and future assessments. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area.

#	Section	Page	MNO VCs	Comment
63	**7.1.1.2 Receptor Description** "The onsite waterbody Stream C is additionally included as an aquatic receptor location because it has higher tritium concentrations than Baie du Doré, and has been identified as fish habitat. Measurements of other radionuclides in Stream C are below detection limits, and are therefore not included in the assessment. It is noted that the South Railway Ditch upstream of Stream C has been identified as potential fish habitat. Since radiological data for the South Railway Ditch is not available, the dose to aquatic receptors in South Railway Ditch is not assessed. It is recommended that the radionuclides in the South Railway Ditch be measured and compared to concentrations in Stream C to ensure that future ERAs consider the on-site location that is bounding in terms of radioactivity in aquatic species (see Section 8.2.3)."	309 of 459	**Metis Lands, Resources & Water** • Availability of Resources	***MNO Comment:*** Building on comment #17, excluding surface water features that don't meet the O.EPA definition of an aquatic habitat isn't protective of Métis resources that are significant to MNO Valued Components ***BP Response:*** This Section is describing the waterbodies and is not excluding surface water features.
64	**7.2.6 Uncertainties and Assumptions in the Exposure Assessment** "Aside from the radioactivity in deer tissue, there was only one measurement for the exposure assessment for terrestrial biota (C-14 in air). This necessitated the modelling or calculation of all other radionuclide concentrations, which generally results in a conservative assessment. The measurement of C-14 in air on the WWMF property boundary was much greater than the modeled value using IMPACT, by over a factor of 30. Given the large discrepancy between the modelled and measured values, there is likely significant uncertainty in the terrestrial biota exposure assessment."	322 of 459		***MNO Comment:*** With the recognition of likely significant uncertainty, no further uncertainty analysis was performed or any statement of confidence provided. Without adequate assessment by filling the data gaps, assumptions and extrapolation on that basis does not instill confidence in the results. In this case, effects monitoring on the terrestrial biota will be vital as the Project proceeds. We therefore request that Bruce Power identify monitoring needs and develop a monitoring plan accordingly.

#	Section	Page	MNO VCs	Comment
				BP Response: Bruce Power remains committed to reviewing the Bruce Power environmental monitoring program and continuing dialogue with MNO to understand how to best consider and incorporate Metis specific values, ideas, insight, information. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area.
65	**8.2 Recommendations for Monitoring** ~All~	335-338 of 459		***MNO Comment:*** We suggest that Bruce Power develop collaboratively with the MNO an actionable working plan with regards to the MNO Annual Monitoring survey.
				BP Response: Bruce Power remains committed to reviewing the Bruce Power environmental monitoring program and continuing dialogue with MNO to understand how to best consider and incorporate Metis specific values, ideas, insight, information. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area.
Predictive Environmental Risk Assessment for Continued Operations Including Major Component Replacement (PEA)				
66	**Executive Summary** **Tier 1 Assessment – Screening and Evaluation of Potential Effects** "Noise – The predicted change in noise levels as a result of MCR activities will not likely be measurable (i.e., not discernible from existing conditions) at off-site receptors locations, as the predicted levels are consistent with current conditions."	4 of 164		***MNO Comment:*** The prediction of change in noise levels because of future MCR activities is problematic as the current prediction has a high level of uncertainty and lacks consideration of MNO rights and interests. Additionally, the current assessment did not consider the MNO Citizens as a receptor for noise. It did not consider the perceptive effects related to noise as a physical stressor on the MNO Citizens.
				BP Response: Bruce Power is willing to have further dialogue on this topic.

#	Section	Page	MNO VCs	Comment
67	**Tier 1 Assessment – Screening and Evaluation of Potential Effects** "Human Environment - The non-radiological human health risk assessment evaluated the potential for health risks for members of the public, and the potential for health risks due to nonradiological chemicals and physical stressors were shown to be negligible considering normal operations at the Site."	4 of 164		***MNO Comment:*** The prediction of change in air quality because of future MCR activities is problematic as the current prediction has a high level of uncertainty and lacks consideration of the MNO rights and interests. Additionally, the current assessment did not consider MNO Citizens as a receptor for noise. It did not take into account the perceptive effects related to air quality as a physical stressor on MNO Citizens. ***BP Response:*** Bruce Power is willing to have further dialogue on this topic.
68	**Executive Summary** **Conclusion** "Overall, as outlined in Section 4 of this report, potential environmental effects of future effects are anticipated to be similar to those associated with the existing operations. Therefore, the existing environmental monitoring programs will be retained as required to confirm predictions and be reported through the annual EMP findings."	6 of 164		***MNO Comment:*** The existing environmental monitoring programs are built on previous programs with no identification and consideration of Métis-specific VCs and inputs. The scope of the PEA should be expanded to consider MNO rights and interest. Furthermore, we suggest that Bruce Power develop collaboratively with the MNO an actionable working plan with regards to the MNO Annual Monitoring survey. ***BP Response:*** Bruce Power remains committed to reviewing the Bruce Power environmental monitoring program and continuing dialogue with MNO to understand how to best consider and incorporate Metis specific values, ideas, insight, information. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area.

#	Section	Page	MNO VCs	Comment
69	**1.5 Predictive Effects Assessment Goals, Approach and Scope** "The PEA is being conducted to demonstrate consideration of the environment and the health of persons during future site activities, including MCR activities. The specific goals of this PEA Are: • to identify changes from the current operations to those during future site activities, including MCR activities, and assess which changes result in potentially greater environmental emissions or effects; • to evaluate the risk to human and ecological receptors based on the bounding scenarios (see below); • to identify the specific objectives for the Environmental Monitoring Program (EMP); and • to support the As Low As Reasonably Achievable (ALARA) principal at site and the progressive safety culture that not only applies to worker safety, but also the protection of the public and the environment."	19 of 164		***MNO Comment:*** MNO Citizens have valuable traditional knowledge about the environment and constitutionally protected rights that rely on healthy lands and resources. We suggest that the PEA should include a specific goal to: advance reconciliation and partnership with First Nation and Métis groups by sustaining the relationship between the natural environment, traditional land use and project development. ***BP Response:*** Bruce Power is willing to have further dialogue on this topic.
70	**1.7.2 Concerns Raised** <u>Métis Nation of Ontario</u>	22 of 164		***MNO Comment:*** There is no mention of the MNO VCs previously identified and presented in the MNO VC Report. We recommend that Bruce Power consider and assess MNO specific VC information, namely Metis Lands Resources and Water and Metis Nationhood. ***BP Response:*** Bruce Power has committed to discussing specific Metis insights into the MNO valued species in order to properly and thoughtfully incorporate such elements into the broader environmental monitoring program and future assessments. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area.

#	Section	Page	MNO VCs	Comment
				MNO Response: As noted earlier, information provided in the VC Report can be reasonably used to inform the Project impacts assessment and mitigation. MNO looks forward to further discussions to ensure MNO information is incorporated while respecting confidentiality concerns.
71	**1.8 Lessons Learned** • "Consider community perspective regarding hazards associated with project activities during planning (e.g., transportation of contaminated material over waterways)."	24 of 164		***MNO Comment:*** The MNO's input should be sought and incorporated into the planning of some project activities. For example, Métis harvesters who may be exercising their rights in the vicinity have certain travel routes, which may be affected by the transportation activities. With MNO input and traditional land use information, it would allow for better planning of those transportation activities. ***BP Response:*** Bruce Power is willing to have further dialogue on this topic.

72	**2.0 Predictive Effects Assessment Method** Figure 4	26 of 164		***MNO Comment:*** Firstly, the screening of this PEA is entirely based on the results whether the baseline ERA is bounding or not. However, the ERA baseline study does not include data with regards to MNO VCs, rights and interests. With the data gaps and underlying uncertainties in the ERA, this PEA does not instill confidence in the prediction of project impacts. Secondly, the PEA approach does not follow typical environmental impact assessment methodology[2]: there is no discussion of the potential effects beyond identification, no discussion of potential mitigation measures applied, no evaluation of residual effects and therefore no determination of significance. Lastly, several potential risks estimated for ecological receptors due to chemical exposures were identified greater than HQ 1. Nevertheless, they are either left unaddressed or not carried forward for further assessment. No corresponding mitigation measure has been identified and applied throughout the ERA and PEA. Without all the above information, it is difficult to understand the project impacts and to be able to conduct effective monitoring. We request that Bruce Power should evaluate the residual effects in a fulsome manner and identify mitigation measures accordingly. ***BP Response:*** Bruce Power would like to provide the MNO with a powerpoint presentation that explains this item (PEA) at a future meeting when appropriate. Bruce Power has committed to discussing specific Metis insights into the MNO valued species in order to properly and thoughtfully incorporate such elements into the broader environmental monitoring program and future assessments. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area.

#	Section	Page	MNO VCs	Comment
73	**4.0 Interactions and Predictive Evaluation of Future Site Activities and the Environment** **4.1 Noise** **Table 4-1: Summary of Future Site Interactions for Noise**	56, 57 of 164		***MNO Comment:*** MCR activities include various construction of MCR centralized office complex, Bruce B security fence modifications, Bruce B parking lot expansion, central storage facility, Bruce B simulator, Bruce B protected area office complex and decontamination facility. These activities have been predicted to produce noticeable noise and potential interaction therefore could result in a measurable change. However, none of these activities were identified as likely resulting in a residual adverse effect or requiring monitoring or compensatory action. This is problematic in terms of noise effects which could potentially affect Métis use of the area directly or indirectly. As identified in the MNO VC Report, Métis harvesters are also potential receptors due to changes in perception based on noise. Further, there is no consideration or mechanism to assess the perceptive effects of the Project on Métis rights and interests. ***BP Response:*** Bruce Power is willing to have further dialogue on this topic.

#	Section	Page	MNO VCs	Comment
74	**4.1.2 Tier 1 Screening of Interactions** "Certain MCR activities are expected to represent a potential noise source that could result in a residual effect to off-site receptors. These activities include: • increased traffic associated with MCR activities (e.g., additional workforce and mobilization and demobilization of construction equipment); • construction and demolition activities associated with Installation of MCR Infrastructure, including crane construction and removal; • removal and installation activities during Steam Generator Replacement after the roof opening hatches are installed; and • Power up process (increased Atmospheric Steam Discharge Valves (ASDVs) and Boiler Safety Valves (BSVs) testing)."		**Metis Lands, Resources & Water** • Lack of Use of Land or Water in Proximity to the Project	***MNO Comment:*** These activities will have noise impact. However, the MNO was not considered for the screening. Further, there is no consideration or mechanism to assess the perceptive effects of the Project on Métis rights and interests. ***BP Response:*** Bruce Power is willing to have further dialogue on this topic.
75	**4.2 Air Quality** **Table 4-8: Summary of Future Site Interactions for Air Quality**	72-74 of 164	**Metis Lands, Resources & Water** • Lack of Use of Land or Water in Proximity to the Project • Availability of Resources	***MNO Comment:*** As noted in the above, various MCR activities such as increase of traffic volume, construction and mobilization and demobilization of construction equipment could result in measurable changes in air quality. However, none of these activities were identified as likely resulting in a residual adverse effect or requiring monitoring or compensatory action. The table of potential interactions does not include Métis harvesters as potential receptors. This is problematic as Métis could be affected directly or indirectly by the Project.

#	Section	Page	MNO VCs	Comment
				BP Response: Air quality was considered in the PEA and the Site will continue to operate within existing limits. Modelling is conducted on all sources, is based on conservative estimation techniques and demonstrates that emissions are to remain below guidelines that are protective for all human health.
76	**4.2.2 Tier 1 Screening of Interactions** "Specifically, the following activities could potentially result in emissions to air above those associated with ongoing site operations: • increased traffic associated with MCR activities; • operation of diesel generators; • construction and demolition activities associated with the Installation of MCR Infrastructure; • welding, cutting, crushing, and grinding tasks associated with the Lead In, Reactor Retube and Feeder Replacement, Steam Generator Replacement and Lead Out activities; • activities part of Systems Lay Up; • activities part of PHT and moderator drain and dry; and • Increased testing of ASDVs and BSVs during Power Up process."	79 of 164	**Metis Lands, Resources & Water** • Lack of Use of Land or Water in Proximity to the Project • Availability of Resources	***MNO Comment:*** These activities should have interactions with Aboriginal Land and Resource Use as these aspects have the potential to affect the exercise of MNO rights and interests in the Project vicinity. However, the potential impact on the MNO was not considered. This is problematic as Métis could be affected directly or indirectly by the Project. ***BP Response:*** Bruce Power is willing to have further dialogue on this topic
77	**4.2.3 Conclusion** "The predicted change in air quality levels as a result of MCR activities will likely result in relatively short durations of measurable effect…. Further, predicted effects are under the control of the Site and readily reversible. As such, all construction activities are anticipated to meet	82 of 164		***MNO Comment:*** There is no mention of what criteria was used to predict the potential adverse effects. It is unclear how the conclusion that the predicted effects are adverse or not was reached.

#	Section	Page	MNO VCs	Comment
	DRL limits, and subsequently CNSC and IAEA regulations and guidance."			***BP Response:*** The site will continue to operate within existing limits. Thus we trust that by staying within existing limits adverse effects will not be reached.
78	**4.6.1.3 Aquatic Receptors** "Aquatic receptors were considered to be exposed to surface water in the on-site stream (Stream C) and adjacent areas of Lake Huron. Since water quality in the discharges from Bruce A and Bruce B met the current regulatory limits, no COPCs were identified in the discharges. Potential risks were assessed due to mercury and strontium in adjacent areas of Lake Huron, since concentrations in surface waters exceeded the benchmarks on a single sampling occasion in 2007. Subsequent sampling events showed no exceedances of the benchmarks, and the risks to aquatic life were considered to be negligible."	125 of 164		***MNO Comment:*** Is there more recent data with respect to mercury and strontium concentration in surface water? We recommend additional data is collected to characterize the surface water quality at and around the Project site and to conduct a complete evaluation of the risks to aquatic life for exposure to the COPCs. ***BP Response:*** Yes, water quality was measured in Stream C and adjacent areas of Lake Huron in 2016 (results are provided in Appendix A of the 2017 ERA, see Tables A-22 to A-24). A stated, "Subsequent sampling events showed no exceedances of the benchmarks, and the risks to aquatic life were considered to be negligible."
79	**4.7.2 Tier 1 Screening of Interactions** However, the following MCR activities were identified as potentially affecting terrestrial receptors through changes in vegetation, wildlife habitat, and/or wildlife. Specifically, these activities were identified as disruptive activities, such as land clearing: • Bruce B Parking Lot Expansion; and • Bruce B Simulator. All construction activities will be completed in accordance with standard procedures and protocols, including mitigation activities. Considering the control in place to limit impact from an increase in project footprint, and that all areas to be affected are on-site and for the most part have been previously disturbed, these potential changes are not expected to result in a residual effect that requires additional monitoring or compensatory action; no significant adverse effect is predicted.	133 of 164		***MNO Comment:*** This methodology lacks residual effect assessment and determination of significance. Residual effects are not identified, mitigation measures are not described, no cumulative effect assessment is considered. ***BP Response:*** Residual effects were considered and were determined to not be expected based on the controls in place which are to limit project footprint and to use site that are already disturbed and thus have minimal natural habitat currently. As no residual effects are expected, no mitigation is required. Given the limit in land area affected, no cumulative impact is expected. Monitoring will continue as part of the ongoing Bruce Power Environmental Monitoring Program. A cumulative effects assessment is also ongoing.

#	Section	Page	MNO VCs	Comment
80	**4.8 Human Environment** **Table 4-21: Summary of Future Site Interactions for the Human Environment** "MCR Centralized Office Complex The timeline for the construction will be communicated to external stakeholders. Potential interaction predicted that could result in a likely measurable change, but not identified as likely resulting in a residual effect. Thus does not indicate requirement of additional monitoring or compensatory action."	134-136 of 164	**Metis Lands, Resources & Water** • Lack of Use of Land or Water in Proximity to the Project • Availability of Resources	***MNO Comment:*** Similarly, a number of future MCR activities should have interactions with Aboriginal (First Nation and Métis) Land and Resource Use as these aspects have the potential to affect the exercise of MNO rights and interests in the Project vicinity. However, Aboriginal groups as a potential receptor groups are not mentioned. Only "external stakeholders" are identified. We request that First Nation and Métis information is disaggregated from public stakeholders. Further, potential impacts on the MNO were not discussed. This is problematic as Métis could be affected directly or indirectly by the Project. ***BP Response:*** Bruce Power has committed to discussing specific Metis insights into the MNO valued species in order to properly and thoughtfully incorporate such elements into the broader environmental monitoring program and future assessments. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area.
81	**4.8.2 Tier 1 Screening of Interactions** "As such, changes predicted in these environmental components are not considered as potentially effecting human receptors. Specifically, the project is not anticipated to affect land use in the area (e.g., consumption of country foods). However, MCR activities were identified as potentially resulting in a direct change that could affect the human environment.	142 of 164	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Contamination of	***MNO Comment:*** As noted in the above, the MNO VCs, especially effects to MNO Citizens from perceived contamination or environmental pollutants were not taken into account in the assessment.

#	Section	Page	MNO VCs	Comment
	The MCR activities are not anticipated to increase the site's footprint (i.e., no effect on cultural resources), however, the heavy lift crane will be visible up to 20 km away, as well additional trees must be cleared and MCR infrastructure established (specifically, Bruce B Parking Lot Expansion and Bruce Simulator); therefore, a observable change in the landscape is anticipated. However, as an industrial site the change is not anticipated to have a measureable effect on aesthetics."		Resources • Perceived Pollutants In the Environment	***BP Response:*** Bruce Power is willing to have further dialogue on this topic.
82	**4.8.2 Tier 1 Screening of Interactions** "Extending the operating life of the Site results in reliable long-term procurement and employment opportunities, including opportunities for local municipal and Indigenous community members. A sustainable local economy will contribute to the wellbeing of these residents. As MCR activity level is comparable to that experienced in 2016 during the station containment outage, the effects from this substantial increase in workforce is not expected to result in a residual effect requiring additional compensatory action. This includes predicted demand on municipal services and infrastructure (e.g., roads)."	143 of 164	**Metis Nationhood** • Actual Opportunities for Business / Contractors • Perceived Opportunities for Business / Contractors • Need for Affordable Housing • Increased Cost of Necessities • Increased Dependence on Social Welfare	***MNO Comment:*** Only positive economic benefits are discussed in this section. The negative potential socio-economic impact on the MNO is not assessed and addressed. The MNO VCs, such as increased cost of necessities and increase in MNO political capacity as a result of a significant increase of the future MCR activities are not considered. We recommend that mitigation measures are developed, and annual monitoring should be undertaken to follow up with these opportunities with MNO Citizens in the Georgian Bay Traditional Territory

#	Section	Page	MNO VCs	Comment
			Programs • Increase or Decrease in MNO Political Capacity	***BP Response:*** Bruce Power is willing to have further dialogue on this topic.
83	**5.0 Environmental Monitoring and Protection Programs** **5.1 Environmental Management System** ~All~	144 of 164		***MNO Comment:*** Given the MCR activities are expected to have potential measurable impact in many aspects, the MNO should be considered as a distinct group within this monitoring program. Further, we recommend that additional and continuous monitoring should be undertaken to monitor changes to intangible Metis issues, changes in Metis attitude, changes in Metis rights and interests and Metis way of life. A collaborative education plan can be implemented with MNO Citizens to present ongoing monitoring results.
				BP Response: Bruce Power has committed to discussing specific Metis insights into the MNO valued species in order to properly and thoughtfully incorporate such elements into the broader environmental monitoring program and future assessments. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area.

#	Section	Page	MNO VCs	Comment
84	**5.2 Spills and Contaminated Lands Program** "As compared to performance of previous years, there was a decrease in category D1 spills, however, there were more Category C and D2 spills in 2016 compared to 2015."	147 of 164		***MNO Comment:*** There is no detail about the program in this section. We recommend that the MNO is duly notified and fully aware of any accidents that occur at the Project site. We recommend that Bruce Power develop collaboratively with the MNO a MNO Emergency Communication and Management Plan, which provides formal notification protocol, emergency response and preparedness training programs. ***BP Response:*** Bruce Power is willing to have further dialogue on the opportunity of notification of MNO as it relates to Emergency Communication and Management Plan.
85	**5.4.1 Independent Environmental Monitoring Program** "The CNSC has implemented its Independent Environmental Monitoring Program (IEMP) to verify that the public and the environment around licensed nuclear facilities are safe. It is separate from, but complementary to, the CNSC's ongoing compliance verification program. The IEMP involves taking samples from public areas around the facilities, measuring and analyzing the amount of radiological and hazardous substances in those samples."	151 of 164		***MNO Comment:*** This Section refers to the Independent Environmental Monitoring Program that was implemented to verify that the public are protected. The MNO, and other Aboriginal groups, should be specifically considered due to the unique consultative process afforded to them through the Crown's duty to consult. ***BP Response:*** Bruce Power is willing to have further dialogue on this topic with the MNO if they believe there is a need to; however, the IEMP is a CNSC program so likely dialogue is best suited between the MNO and the Crown. ***MNO Response:*** MNO will have discussions with CNSC in this regard. However, in order to avoid overlapping monitoring activities and adequately define gaps in the current monitoring programs in terms of MNO areas of interest, we recommend a tri-partite dialogue and coordination to achieve this goal.

#	Section	Page	MNO VCs	Comment
86	**5.6 Environmental Risk Assessment** "The ERA is a systematic process used to identify, quantify, and characterize the risk posed by contaminants and physical stressors in the environment on biological receptors, including the magnitude and extent of the potential effects associated with a facility."	153 of 164		***MNO Comment:*** Biological receptors must be defined as there was no consideration of Métis specific issues as potential receptors. ***BP Response:*** Bruce Power has committed to discussing specific Metis insights into the MNO valued species in order to properly and thoughtfully incorporate such elements into the broader environmental monitoring program and future assessments. Bruce Power agrees that a jointly developed work plan would be the best way to proceed with this area.
87	**5.6 Environmental Risk Assessment** "The overall iterative nature of the ERA will capture any substantial change in the facility or in an activity that could alter the potential interaction with the environment. In other words, the process requires that the ERA reflect the changes in the effluent, environmental monitoring and groundwater monitoring programs such that the environmental risks are assessed and mitigated."	154 of 164		***MNO Comment:*** There is no definition for the term within the Act, therefore, we assume that the definition of *environment* used is the definition under the *Canadian Environmental Assessment Act*, 2012. Therefore, monitored parameters and monitoring programs should not only focus on biophysical components but also on the MNO's intangible aspects of rights, interests and way of life. ***BP Response:*** Bruce Power defines Environment within our Environmental Safety Management Program as: Environment refers to the components of the earth, including: • Land, water and air, including all layers of the atmosphere • All organic and inorganic matter and living organisms • The interacting natural systems that include components Bruce Power remains committed to having further dialogue on this topic with the MNO. ***MNO Response:*** The definition of Environment in Bruce Power's Environmental Safety Management Program appears to be limited to biophysical components.

#	Section	Page	MNO VCs	Comment
88	**6.0 Cumulative Effects Assessment** **6.4 OPG's Deep Geologic Repository Project** The residual effect is predicted to occur throughout the site preparation and construction, and decommissioning phases. As described in Section 4.1, predicted changes in noise levels as a result of MCR activities will not likely be measurable (i.e., not discernible from existing conditions) at off-site receptors locations, as the predicted levels are consistent with current conditions. Therefore, no adverse cumulative effects are likely. In addition, the Environmental Impact Statement for the DGR Project included an assessment of cumulative effects, including those that may occur in combination with effects from existing and planned activities by Bruce Power. The assessment concluded that there would be no adverse cumulative effects	157 of 164	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Lack of Use of Land or Water in Proximity to the Project • Perceived Contamination of Resources • Perceived Pollutants In the Environment • Availability of Resources **Metis Nationhood** • Participation in Community Events • Perception of Change in Key Components of Metis Identity • Increase or Decrease in Metis Citizens Knowledge Transfer	***MNO Comment:*** The cumulative effects assessment is largely superficial. The assessment lacks characterization of the residual effects and determination of significance of those effects. No avoidance options or mitigation measures are discussed. In the Project region where various facilities are expected to operate in the coming years, namely Bruce A and B, Bruce Power's WWMF, OPG's proposed DGR, CNL and Hydro One transmission infrastructure, potential cumulative effects of a synergistic and additive nature are expected. Particularly, the cumulative effect of Bruce Power's thermal emissions coupled with rising lake temperatures, other thermal influences and nutrient (i.e., phosphorus) loading is expected to impact aquatic habitat(s) for mammals, reptiles, amphibians and fish. These factors must be considered in the context of cumulative effects. We suggest it is prudent to consider doing a regional cumulative effects study which is effects-based and allows for questions of a broader nature related to ecological thresholds and synergistic effects. Instead of doing "one-off" and disconnected cumulative effects assessments for each individual project and focusing on its localized stressors, we recommend that, going forward, regional assessments to evaluate and manage cumulative effects and to identify the potential impacts on the MNO rights and interests should be developed and implemented to inform project assessment in a wholistic manner. Further, this regional assessment can be undertaken in a collaborative process with the MNO representatives enabled by an integration of traditional knowledge, science and evidence.

#	Section	Page	MNO VCs	Comment
				BP Response: A cumulative effects assessment is currently ongoing.
				MNO Response: We suggest that Bruce Power seek MNO input in doing the cumulative effects assessment and share the results with MNO.
Supplement 6 University Research Summary				
89	**Aboriginal health**	11 of 52		***MNO Comment:***

#	Section	Page	MNO VCs	Comment
	The goal of this project was to examine immunity to Haemophilus Influenza type a (HiA) and Streptococcus pneumoniae among Saugeen First Nations Members.			Why did the project not involve MNO citizens? Bruce Power should provide a response and/or a plan to involve MNO. ***BP Response:*** Bruce Power has a department Integrative Research that focuses on various research topics, Bruce Power is willing to provide the MNO with an overview of how this process works.

<table>
<tr><th>#</th><th>Section</th><th>Page</th><th>VCs</th><th>Comment</th></tr>
<tr><td colspan="5">CMD 5454359 – Submission from CNSC Staff</td></tr>
<tr><td>1</td><td>Executive Summary

“An Environmental Assessment (EA) under the Canadian Environmental Assessment Act 20123 (CEAA 2012) was not required for this license renewal application, nor did section 67 of CEAA 2012 apply, as no new project (defined under section 66 of CEAA 2012) or physical activities are being authorized under the proposed licence. However, an EA under the Nuclear Safety and Control Act (NSCA) and its regulations was conducted for this application. CNSC staff conclude that the licensee will make adequate provision for the protection of the environment and health of persons.”</td><td>PDF 10 of 457</td><td>Metis Lands, Resources & Water
• Perception of Change in Land or Water Available
• Perceived Contamination of Resources
• Perceived Pollutants in the Environment
• Availability of Resources
Metis Nationhood
• Participation in Community Events
• Perception of Change in Key Components of Metis Identity
• Actual Opportunities for Business / Contractors
• Perceived Opportunities for Business / Contractors</td><td>The EA completed under the Nuclear Safety and Control Act (NSCA) builds on previous environmental risk assessment and environmental monitoring technical work that was scoped prior to meaningful consultation with the Métis Nation of Ontario (“MNO).

The Scope of the Ecological Risk Assessment (ERA) should be expanded to consider the traditional uses, and harvesting rights of MNO citizens.</td></tr>
<tr><td>2</td><td>1.2 Highlights

Table 2: Summary of Recommendations made by Commission members

<table><tr><th>Action</th><th>Description</th><th>Status</th></tr><tr><td>Form a fish impingement and entrainment monitoring plan Working Group</td><td>CNSC staff and Bruce Power to form a working group with interested Indigenous</td><td>Working Group formed.
Action Complete</td></tr></table></td><td>PDF 18 of 457</td><td></td><td>The MNO attended and presented at a Fisheries Workshop hosted by CNSC in the summer 2017. The workshop effectively shared information with attendees. However, the workshop did not result in a work plan that identifies steps towards resolving outstanding fisheries issues as they relate to Bruce Power’s operations.

The MNO recommends that CNSC work with the MNO to determine next steps.

Further, no details about forming a working group with interested Indigenous groups for fish impingement and entrainment monitoring plan was found in the 2015 EA Follow-up Monitoring Program Report. Please include such information in the 2015 EA Follow-up Monitoring Program Report.</td></tr>
</table>

#	Section	Page	VCs	Comment
	groups for fish impingement and entrainment monitoring plan component of the EA Follow-up Monitoring Program.			
3	**4.7 Radiation Protection** Radiation Protection Program Performance "CNSC staff reviewed and accepted the revision to the program and concluded that applicable regulatory requirements were met." Estimated Dose to Public "CNSC staff determined that Bruce Power ensured the protection of members of the public in accordance with the requirements of Radiation Protection Regulations. The reported estimated dose to a member of the public from Bruce Power site over the current licensing period remained well below the annual public dose limit of 1 mSv/year (1000 µSv/year)."	PDF 101 of 457	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Lack of Use of Land or Water in Proximity to the Project • Perceived Contamination of Resources • Perceived Pollutants in the Environment • Availability of Resources	There is no mention of baseline data collection with the MNO for calculating the doses to the public. This Program is designed to meet CSA and other regulatory requirements, which do not specifically consider Métis rights and interests. Further, there is no mention of MNO involvement in the development or implementation of this Program. We request that MNO-specific information be collected and incorporated into the assessment and regulatory filing. In addition, we recommend that Bruce Power involve MNO in this Program. MNO and Bruce Power are actioning the development on a MNO monitoring program.
4	**4.9 Environmental Protection** Assessment and Monitoring "CNSC staff determined that Bruce Power continued to implement an effective environmental monitoring program over the current licence period. Bruce Power's radiological environmental monitoring program (REMP) served to demonstrate that site emissions of nuclear material were properly controlled. The program provided data for estimates of annual dose to the public, and that public dose was in compliance with the regulatory dose limit. To complement ongoing compliance activities, the CNSC has implemented its own IEMP."	PDF 110 of 457	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Contamination of Resources • Perceived Pollutants in the Environment	Similarly, the REMP program is designed to meet CSA standards which do not take the Métis rights and interests into consideration. MNO specific information was not collected under the REMP program. The MNO met with CNSC staff in January 2018 to discuss the IEMP and the inclusion of MNO-specific information into the CNSC monitoring programs. The MNO expressed interest at the time and would like to restate the request that the MNO-specific information be collected and incorporated into the assessment and regulatory filing. To that end, we suggest that an actionable workplan could coordinate and connect the MNO's Annual Monitoring Program, Bruce Power's monitoring and CNSC's IEMP.

#	Section	Page	VCs	Comment
				MNO and Bruce Power are actioning the development on a MNO monitoring program.
5	Environmental Risk Assessment "CNSC staff's review identified five actions for Bruce Power to undertake to enhance the ERA which included: • future monitoring and assessment to address potential risks to aquatic and semi-aquatic receptors • future monitoring of impingement and entrainment to reduce data uncertainties • development of a winter thermal plume model and action plan to reduce uncertainties • future monitoring and assessment to address knowledge and data gaps in bird, plant, invertebrate, etc. • providing further information on beta and gamma emitters in soils and dose due to animal product ingestion However, the supplemental information [8] and additional actions identified by CNSC staff do not change any conclusions of the 2017 ERA and the PEA."	PDF 112 of 457	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Lack of Use of Land or Water in Proximity to the Project • Perceived Contamination of Resources • Perceived Pollutants in the Environment • Availability of Resources	As noted above, this EA builds on previous environmental risk assessment and environmental monitoring technical work that was scoped prior to meaningful consultation with the MNO. The Scope of the ERA should be expanded to consider the traditional uses, and harvesting rights of MNO citizens. Apart from the five actions identified by CNSC, there remains data gaps and uncertainties in this ERA submission with respect to potential effects to MNO rights and interests. In particular, we suggest that the future ERA should include but not limited to the following: • Assessment and monitoring mechanism in ecological and human health risk assessments to assess the perceptive effects of the Project on MNO rights and interests. • Collecting baseline data and incorporating assessment thereof by developing and completing a Metis-specific survey • Incorporating the monitoring results from the MNO Annual Monitoring Program • Undertaking studies to characterize sediment quality and surface water quality at and around the Project site, changes to the zooplankton community influenced by Bruce Power's ongoing operations MNO and Bruce Power are actioning the development on a MNO monitoring program and MNO-specific diet survey.
6	**4.9.2 Discussion** **Effluent and Emissions Control** "A new CSA Standard N288.5-11, Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills, was	PDF 109 of 457	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Contamination	Changes to effluent monitoring programs at Bruce Power will influence MNO Valued Components ("MNO VCs) as identified and submitted in the MNO Valued Components Monitoring Report ("MNO VCs Report"). Bruce Power should incorporate findings of the MNO VCs Report into effluent monitoring program updates. Integrating MNO VCs into

#	Section	Page	VCs	Comment
	released during this licensing period and Bruce Power has committed to meet the standard by December 31, 2018."		of Resources • Perceived Pollutants in the Environment • Availability of Resources	monitoring programs will connect technical studies with the perceptions of MNO citizens. Bruce Power should circulate the effluent monitoring program standard and planned changes to existing effluent monitoring programs to the MNO for review and comment related to traditional uses and harvesting rights of the MNO.
7	**4.9.2 Discussion** **Assessment and Monitoring** "CNSC and Environment and Climate Change Canada (ECCC) continued to monitor the potential impact of thermal discharges on temperature-sensitive fish species living in the environment surrounding the Bruce site. Assessment of existing information and data indicated that no significant exposure or potential effects to the environment have occurred over the current licensing period."	PDF 110 of 457	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Lack of Use of Land or Water in Proximity to the Project • Perceived Contamination of Resources • Perceived Pollutants in the Environment • Availability of Resources **Metis Nationhood** • Actual Opportunities for Business / Contractors • Participation in Community Events • Perception of Change in Key Components of Metis Identity	Changes to the aquatic vegetation in Lake Huron are acknowledged to be influenced by factors beyond Bruce Power's operations and emissions. However, ongoing operations at Bruce Power will contribute to changes to aquatic habitat in Lake Huron through the relicensing horizon, specifically near the Bruce Power site. Cumulative changes to the aquatic ecosystems will alter habitats of important Metis-harvested resources including fish species of interest to the MNO. The cumulative effect of Bruce Power's thermal emissions coupled with rising lake temperatures, other thermal influences and nutrient (i.e., phosphorus) loading is expected to impact aquatic habitat(s) for mammals, reptiles, amphibians, and fish. We suggest that Bruce Power should: • Evaluate the cumulative effect of Bruce Power's thermal emissions coupled with rising lake temperatures, other thermal influences and nutrient loading on important aquatic habitats for mammals, reptiles, amphibians and fish; and, • Develop and implement a comprehensive long-term monitoring program to evaluate the cumulative impacts of thermal emissions. Bruce Power remains committed to having more discussions on this topic with the MNO.
8	**4.10 Emergency Management and Fire Protection** Emergency Response Facility and Equipment	PDF 118 of 457		MNO is concerned about potential impacts to MNO citizen's health and the exercise of Métis rights in the event of accidents and any accidental releases related to the Project. In the event of an emergency, the MNO should be notified to ensure relevant information can be passed on to the Métis harvesters in the region as soon as possible.

#	Section	Page	VCs	Comment
	"CNSC staff determined that Bruce Power has adequate emergency response facilities and equipment in place to monitor and respond to a nuclear emergency."			Bruce Power has committed to develop collaboratively with the MNO a MNO Emergency Communication and Management Plan, which provides formal notification protocol, emergency response and preparedness training programs where determined to be applicable and in light of the broader program for the overall communities around Bruce Power.
9	**5.3 Bruce A Environmental Assessment Follow-up Monitoring Program** "CNSC staff concluded that actions related to the EA Follow-up Monitoring (FUMP) are closed. Two elements from the FUMP (winter thermal effects on sensitive stages of whitefish development and the potential impact to deepwater sculpin due to entrainment) will continue to be assessed as part of the ongoing ERA to reduce uncertainties through additional monitoring and/or data interpretation. DFO has informed Bruce Power that the habitat improvement projects may not provide adequate fish production to offset the loss of fish from the cooling water intakes."	PDF 141 of 457	**Metis Lands, Resources & Water** • Availability of Resources	As advised by the DFO, some impingement measures are less effective especially in terms of some MNO Fish Species of Interest, for example Yellow Perch. According to the DFO, what is the suggested magnitude of fish loss that is considered to be unlikely to have an adverse effect? What is the threshold for effects? As the EA FUMP is now closed, threshold for effects and actionable plan for monitoring should be duly discussed with the MNO.
10	**5.4 Fisheries Act Authorization** "During the application process, Bruce Power is proceeding at its own discretion with collecting baseline data for two fish habitat improvement projects, which is included in the offsetting plan section of its Fisheries Act authorization application. DFO has informed Bruce Power that the habitat improvement projects may not provide adequate fish production to offset the loss of fish from the cooling water intakes. For example, the Métis Nation of Ontario provided detailed technical comments on the September 2016 Fisheries Act authorization application that were considered in the revised May 2017 application. Overall, CNSC staff conclude that fish populations were adequately protected. CNSC staff determined that satisfactory progress is being made by Bruce Power on the Fisheries Act	PDF 143 of 457	**Metis Lands, Resources & Water** • Availability of Resources	The literature reviewed related to Bruce Power's effects on Lake Huron fisheries focuses on commercial fisheries and does not consider MNO Fish Species of Interest. Bruce Power's perspective that the DFO authorization is an administrative process to document existing compliance seems to be based on previous Environmental Risk Assessment work and monitoring that focuses on the Lake Huron Commercial Fishery. MNO harvesting and fisheries including the list of MNO Fish Species of Interest provided to Bruce Power through ongoing dialogue should be incorporated into the evaluation of the nature and extent of the impact on the environment. In the absence of available data on Indigenous fisheries harvests, some form of benchmarking exercise will be needed to evaluate the extent of the impact of Bruce Power's ongoing operation on MNO harvesting and fisheries including MNO Fish Species of Interest. Any benchmarking exercise should incorporate MNO traditional knowledge in an effort to characterize the traditional Aboriginal fishery and Metis rights and

#	Section	Page	VCs	Comment
	authorization application, which is expected to be ready for submission to the DFO by June 2018."			interests. Bruce Power has provided responses to some of the MNO's technical comments. However, there are still issues for discussion. For example, there is a lack of comprehensive description of Aboriginal Fisheries in the DFO authorization application. We suggest that Bruce Power should work with the MNO to resolve any outstanding issues in a timely manner. Bruce Power remains committed to having more discussions on this topic with the MNO.
11	**5.5 Licensee Public Information Program** "Through the production and distribution of community newsletters, website updates, event reports, news releases, community partnership and sponsorship, public and Aboriginal engagement, social and traditional media, government relations, external stakeholder engagement and employee and retiree communications tools, Bruce Power worked to keep the public informed of current and future station activities, emergency preparedness measures and its commitment to safety, security and the environment."	PDF 144 of 457		A Public Information Program and Public Disclosure Protocol are insufficient notification and communication protocols for the MNO. MNO rights and interests cannot be assessed through a generic Public Information Program. Aboriginal consultation must be directed at each potentially-affected Aboriginal group. Bruce Power has committed to developing collaboratively with the MNO a MNO Emergency Communication and Management Plan.
12	**5.6 Aboriginal Consultation and Engagement Activities** "CNSC staff considered the information received from Bruce Power in the licence renewal application, as well as information received from Indigenous groups, to determine whether there is a duty to consult on this application. Based on the information received and reviewed, CNSC staff determined that the licence Renewal application does not propose any changes to the facility's footprint, is located in a secure fenced-in site that has been in operation for many decades, and there are no new activities/changes that could reasonably be anticipated to have any novel off-site impacts.	PDF 146 of 457	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Lack of Use of Land or Water in Proximity to the Project • Availability of Resources	The proposed MCR activities will entail various construction activities, such as MCR centralized office complex, Bruce B security fence modifications, Bruce B parking lot expansion, central storage facility, Bruce B simulator, Bruce B protected area office complex and decontamination facility. These activities have been predicted to produce noticeable noise and other measurable changes, which may cause potential interactions between with the MCR activities and MNO VCs. There is a lack of discussion around the potential socio-economic impacts as a result of increasing construction activities. Potential impacts to the MNO could include an influx of workers, creating higher housing costs, increasing non-traditional harvesting activities in the local resources, creating indirect requirements on the existent infrastructure and local police and

#	Section	Page	VCs	Comment
	The SON and the MNO, however, raised concerns related to impacts on fish from the operation of the Bruce NPP. CNSC staff are of the opinion that the operations of the Bruce NPP are not having population level effects on fish in Lake Huron, but acknowledge that there is some uncertainty related to the extent of potential localized effects on fish. In light of this, the CNSC is consulting Indigenous groups in an effort to better understand their concerns. In addition, ongoing monitoring, data collection, and analysis, including ongoing consultation as information is received, will occur. Given this, CNSC staff view any duty to consult as being at the low end of the spectrum."			security force and so forth. However, none of these activities was identified as likely resulting in a residual adverse effect or requiring monitoring or compensatory action. Further, the MNO has raised *not only* the concerns related to impacts on fish, but other various concerns as presented in the MNO VCs Report. The MNO is concerned about the implications and potential effects brought by the additional interactions between the MCR activities and the environment. For example, the noise effects could potentially affect the exercise of Metis rights and use of the area directly or indirectly.
13	**Métis Nation of Ontario** "Bruce Power has committed to work with the MNO to discuss how the identified VCs can be incorporated into their environmental monitoring programs and subsequent ERA. CNSC will continue to meet with the MNO to discuss how the information can also be incorporated into the IEMP."	PDF 150 of 457		While the MNO VCs Report was submitted to Bruce Power, it was left out in this license renewal application. Currently MNP and Bruce Power are developing an actionable workplan to coordinate and connect the MNO's Annual Monitoring Program, Bruce Power's monitoring and CNSC's IEMP and duly incorporate the MNO VCs monitoring results into these programs.
14	**5.11.3 Form a fish impingement and entrainment monitoring plan working Group** "Following the 2015 Bruce Power licence renewal, CNSC staff worked with local Indigenous groups to provide them with the most recent knowledge regarding fisheries issues at the Bruce site to work towards resolving their concerns. This took the form of a multi-stakeholder workshop held in June 2017 titled "Lake Huron/Saugeen watershed workshop: BNGS interaction with fisheries resources". MNO outlined their concerns with respect to fisheries resources. CNSC staff consider this action closed. CNSC staff will continue to meet the Indigenous groups on any concerns they may have on fisheries resources on an individual basis, as requested by the communities."	PDF 158 of 457		The completed studies and assessments are mainly addressing commercial fishing and do not seek to protect the Aboriginal right to fish for subsistence, social or ceremonial purposes. Further, as mentioned earlier, we recommend that CNSC prepare a work plan with the MNO to determine next steps towards resolving outstanding fisheries issues.

#	Section	Page	VCs	Comment
15	**5.11.8 Evaluate adequacy of nuclear emergency response plans** "The Commission requested that Bruce Power consult with local municipalities to ensure that their nuclear emergency response plans are adequate. Bruce Power completed this action by working with local municipalities (Kincardine and Saugeen Shores)."	PDF 161 of 457		As noted earlier, Metis input should have been sought in order to ensure the adequacy of the emergency response plans. We suggest that CNSC and Bruce Power engage the MNO citizens in this respect and develop Metis notification/communication protocol and procedures in these plans. MNO and Bruce Power are currently in discussions on how to implement this recommendation.
Addendum G Environmental Assessment Report (CMD 5401045)				
16	**Executive Summary** CNSC staff concluded that the potential risk from physical stressors and radiological and nonradiological releases to the atmospheric, terrestrial, hydrogeological, aquatic and human environment are generally low to negligible and the ERA to be consistent with the overall methodology of the CSA Group Standard N288.6-12."	PDF 198 of 457	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Contamination of Resources • Perceived Pollutants in the Environment • Availability of Resources **Metis Nationhood** • Participation in Community Events • Perception of Change in Key Components of Metis Identity • Actual Opportunities for Business / Contractors • Perceived Opportunities for Business / Contractors	The EA conclusion is premised on biophysical components without identifying effects to Métis rights and interests. The conclusion is based on compliance with CSA Standards and CNSC regulatory requirements, which do not explicitly consider risks to the MNO rights and interests. Pursuant to REGDOC 2.9.1 *Environmental Principles, Assessments and Protection Measures*, environmental effects under NSCA include any effect of any change referred to on "the current use of lands and resources for traditional purposes by Aboriginal persons". Additionally, it provides that "the EA report for an EA under the NSCA covers those elements of the facility or activity that are deemed to be of Aboriginal, public or general interest". Biophysical components are only one facet of Aboriginal rights and by focusing on this, key aspects of Métis cultural and societal values are missed. For example, these components do not allow for MNO attitudes and perceptions to be considered. We therefore recommend that CNSC should take perceptive and social aspects of Aboriginal rights into its decision making and governing laws and regulations.
17	**1.1 Purpose** "These topics include atmospheric, aquatic, geological, hydrogeological, terrestrial, environments and human health. Topics of regulatory interest include greenhouse gas emissions and regional monitoring conducted by other levels of government."	PDF 203 of 457		The listing of selected topics which were presented in detail in the EA Report did not include Aboriginal rights and interests, specifically, MNO rights and interests. This topic is of interest and importance to the MNO and assessment on the potential effects to the MNO should have been detailed as part of the EA Report.

#	Section	Page	VCs	Comment
18	**1.2.1 Project Overview** **Waste management** "Additional waste management measures during the MCR activities include: • Reactor retube and feeder replacement waste will be stored in new radiological waste containers on the Bruce nuclear site. • Existing steam generators will be stored at OPG's WWMF, located on the Bruce nuclear site. • Pressure, feeder and calandria tubes will be cut and placed in specially designed waste containers, which will be transferred directly to OPG's WWMF. • Radiological waste (low- and intermediate-level waste) will be sampled, monitored for radioactivity and transferred to a third party contractor. • Non-radiological conventional and hazardous waste will be sampled, monitored and transferred to a third party contractor."	PDF 207 of 457		With regards to radiological waste (low- and intermediate-level waste) that will be sampled, monitored for radioactivity and transferred to a third party contractor, how is the oversight of such third party contractor provided and where is the low- and intermediate-level waste transferred to? Please provide more details.
19	**2.1.1 Environmental Risk Assessment** "CNSC staff requested the ERA be updated to provide clarification and/or additional information. Specifically, Bruce Power is to provide, through modifications and/or enhancements of their existing environmental monitoring program or through updates to the ERA, the following: • future monitoring and assessment to address potential risks to aquatic and semi-aquatic receptors utilizing the South Railway Ditch and the former sewage lagoon • future monitoring of impingement and entrainment to reduce data uncertainties, including entrainment monitoring of Deepwater Sculpin and to refine the conclusions on potential impacts via the cooling water intake	PDF 210, 211 of 457	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Contamination of Resources • Perceived Pollutants in the Environment • Availability of Resources **Metis Nationhood** • Participation in Community Events • Perception of Change in Key Components of Metis	As noted in the above, the EA and ERA focussed on identifying interactions between activities and the environment, but does not specify where or when socio-economic effects and intangible aspects of Metis rights and interests are assessed. We suggest that CNSC is involved in the development of the MNO Annual Monitoring Program. MNO and Bruce Power are currently in discussions to action the design and implementation of a MNO monitoring program.

#	Section	Page	VCs	Comment
	• a winter thermal plume model and action plan to reduce uncertainties related to potential risk to fish species • future monitoring and assessment to address knowledge and data gaps in bird, plant, invertebrate, fish and wildlife exposure to COPCs, including hazardous contaminants, alpha emitters, C-14, tritium and organically bound tritium, and other radionuclides to reduce uncertainty in the ecological risk assessment • further information on beta and gamma emitters in soils and dose due to animal product ingestion to confirm the conservative assumptions used in the human health radiological risk assessment CNSC staff will track these recommendations through Action Item 2018-07-12218 and through review of the environmental monitoring program reports submitted annually to the CNSC and/or through future revisions of the ERA."		Identity • Actual Opportunities for Business / Contractors • Perceived Opportunities for Business / Contractors	
20	**Table 2.2: Summary of Bruce Power's 2017 ERA conclusions** ~All~	PDF 211 of 457		MNO specific VCs were not considered as potential receptors. There was no consideration of how physical stressor would affect MNO citizens.
21	**2.1.4 Environmental Monitoring** "Based on CNSC staff reviews of the Bruce Power's annual EMP reports, CNSC staff concluded that Bruce Power has adequate measures in place to provide adequate protection of the environment."	PDF 213 of 457		This section does not discuss monitoring the potential effects on the exercise of MNO rights in the Project vicinity.
22	**2.1.5 Public Dose** "The specific dose estimates are provided in table 3.14, of section 3.1.6 which outlines the details of the human health risk assessment (HHRA). The HHRA, a subelement of the ERA [12] is completed for both radioactive and hazardous substances."	PDF 214 of 457		Section 3.1.6 is not found in this EA document.
23	**2.2.3 EA Follow-up Program** "To achieve the purpose of the EA follow-up program additional work on the overall topics of substrate temperatures and Deepwater Sculpin will be addressed within future ERA updates,	PDF 217 of 457	**Metis Lands, Resources &**	The EA follow-up program should include MNO Fish Species of Interest in addition to Deepwater Sculpin. As the EA follow-up program is closed, monitoring and follow-up elements specific to the MNO rights and interests, such as radiation and

#	Section	Page	VCs	Comment
	EMP and as part of the Fisheries Act authorization, as appropriate. Therefore, these elements (elements 3.3 and 3.9) of the EA follow-up monitoring program have been closed. While the EA follow-up program for these two elements is closed, CNSC and DFO staff recommended additional monitoring for entrainment and substrate temperatures are completed under Bruce Power's EMP. More details are provided in the Aquatic Environment section of this EA report, under Physical Stressors. Table 2.4: Status of EA follow-up and monitoring elements for Bruce A Refurbishment for Life Extension and Continued Operation"		**Water** • Availability of Resources	chemical dose to the MNO citizens, effects of thermal plumes on species important to the MNO harvesters, substrate temperature and Metis perceptions should be duly developed under the MNO Annual Monitoring Program. MNO and Bruce Power are currently in discussions to action this recommendation.
24	**3.2.1 Atmospheric Environment** "Based on the review of the 2017 ERA, CNSC staff concluded that potential risks to terrestrial life from non-radiological contaminants in sediment, drinking water and surface water, and from radionuclides through external exposure and consumption of potentially contaminated soil, vegetation or animals are negligible. Additionally, CNSC staff concluded that risks to terrestrial biota due to physical stressors are negligible."	PDF 230 of 457	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Lack of Use of Land or Water in Proximity to the Project • Availability of Resources	There was no consideration of how physical stressors would affect MNO citizens. For example, there is no mechanism to assess the perceptive effects of the Project to MNO VCs, rights and interests.
25	**3.2.2 Terrestrial Environment** **"**Terrestrial Biota Hunting is a popular activity in the area surrounding the Bruce nuclear site. As well, Indigenous communities identified hunting and trapping of wildlife as part of traditional land use and harvesting activities. As such, Bruce Power conducted a survey in 2016 to determine which households consumed wild meat sourced within Bruce County. Of the 258 households surveyed, 38 (15%) indicated that they consumed wild animals (deer, rabbit, waterfowl, turkey and bear) from within Bruce County."	PDF 227 of 457	**Metis Lands, Resources & Water** • Availability of Resources	The definition of the new Hunter/Fisherman receptor may underestimate exposure to radiological contaminants for MNO Citizens harvesting closer than 20km north of the Site. We recommended that Bruce Power complete an MNO specific diet study to understand MNO consumption patterns in order to properly determine the potential for radiological effects to MNO members. MNO and Bruce Power are currently in discussions to action this recommendation.
26	**3.2.4 Aquatic Environment**	PDF 232 of 457	**Metis Lands, Resources &**	Areas not considered to represent aquatic habitat following on the Ontario Environmental Protection Act, Part XV.1, Ontario Regulation

#	Section	Page	VCs	Comment
	Because the South Railway Ditch was constructed with the intention of controlling stormwater drainage from the WWMF, it does not meet the definition2 of a water body. However, considering the South Railway Ditch has naturalized over time and provides potential fish habitat, it has been incorporated into the assessment insofar as assessing its downstream contribution to Stream C. Bruce Power asserted that through the assessment of Stream C in the ERA, the upstream contribution of the South Railway Ditch is considered, including any potential contribution of contaminants into the surface water and sediment quality of Stream C. **However, CNSC staff expect that the South Railway Ditch sediment, water quality and risks to receptors be included in future versions of the ERA, rather than strictly assessing the risk due to water quality contribution from the Railway Ditch to Stream C.**		**Water** • Perception of Change in Land or Water Available • Availability of Resources	153/04 definition exclude potentially significant surface water features on or around the site, including the On-Site Wetland, the storm water drain under Interconnecting Road, and the railway ditches. These features represent likely habitats supporting traditional Metis plant, fish, and wildlife resources that are significant to MNO traditions and Harvesting Rights. Characterizing the surface water and sediment quality in on-Site surface water features representing aquatic habitats or potential aquatic habitats will allow evaluation of the environmental risks associated with chemical effects associated with exposure to sediment on and around the Site. Bruce Power should: • Undertake a study to characterize the sediment quality in Stream C and other surface water features at and around the Site. • Undertake a study to characterize the surface water quality at and around the Site. Bruce Power remains committed to having more discussions on this topic with the MNO.
27	**Aquatic Biota** The presence of periphyton along the Lake Huron shoreline in the Bruce area was confirmed in a 2014 algal growth study [27] Baie du Doré hosted higher concentrations because of the warmer water temperatures, limited ice scour and shelter from Lake Huron's wave action. Phytoplankton also exists in Lake Huron, but density and diversity is generally low because of low nutrient availability. Baie du Doré and similar sheltered areas receiving runoff have phytoplankton in greater quantities than Lake Huron in general. Dramatic changes in Lake Huron's zooplankton community (i.e., diversity and abundance significantly reduced) since the early 2000's have occurred in response to water quality management policies (e.g., policies to reduce nutrient loading) and the emergence of predatory non-native cladoceran (i.e., branchiopod crustacean) and zebra mussels [28]. It is anticipated that the zooplankton community			The changes to the Lake Huron zooplankton community suggests a changing aquatic ecosystem that is altering habitats of important Metis-harvested resources including fish species of interest to the MNO. Changes to the aquatic vegetation in Lake Huron are acknowledged to be influenced by factors beyond Bruce Power's operations and emissions. However, ongoing operations at Bruce Power may contribute to changes to aquatic habitat in Lake Huron through the relicensing horizon, specifically near the Bruce Power site. The cumulative effect of Bruce Power's thermal emissions coupled with rising lake temperatures, other thermal influences and nutrient (i.e., phosphorus) loading is expected to impact aquatic habitat(s) for mammals, reptiles, amphibians, and fish. Bruce Power should: • Evaluate the cumulative effect of Bruce Power's thermal emissions coupled with rising lake temperatures, other thermal

#	Section	Page	VCs	Comment
	around the Bruce site has also changed reflecting the broader ecosystem patterns that have established in Lake Huron, and these changes will continue to be reflected in the future.			influences and nutrient loading on important aquatic habitats for mammals, reptiles, amphibians and fish; and, • Develop and implement a comprehensive long-term monitoring program to evaluate the cumulative impacts of thermal emissions. Bruce Power remains committed to having more discussions on this topic with the MNO.
28	**Conclusion** "CNSC staff determined that Bruce Power's EMP provided sufficient information demonstrating radiological and non-radiological contaminant concentrations in the aquatic environment surrounding the Bruce nuclear site are generally low and if elevated, the contamination is localized. The CNSC expects Bruce Power to propose monitoring of the South Railway Ditch to confirm its uses or non-use as habitat. If receptors are present, the risk should be addressed in future versions of the ERA."	PDF 241 of 457	**Metis Lands, Resources & Water** • Availability of Resources	There remains to be a substantial amount of data gaps and uncertainties in the assessment of aquatic life and habitat. For example, more recent data with respect to mercury and strontium concentration in surface water. We suggest that Bruce Power collect additional data to characterize the surface water quality at and around the Project site and to conduct a complete evaluation of the risks to aquatic life for exposure to the COPCs. Further, MNO VCs are not considered as potential receptors. For example, the increasing occurrence of nuisance algae along the eastern shoreline of Lake Huron, including Baie du Dore, suggests a changing aquatic ecosystem that will alter habitats of important Metis-harvested resources including fish species of interest to the MNO. The increased frequency in the occurrence of nuisance algae influences the MNO harvesters' perception of access to water and the quality of water in Lake Huron and Baie du Dore. No mechanism was employed to address the perceptive effects of the Project to MNO VCs, rights and interests. As a recommendation, we suggest that yearly or bi-annual nuclear community sessions with CNSC/Bruce Power and OPG in Region 7, could provide an opportunity to facilitate appropriate communications and build trust-based partnership. The MNO would appreciate more sessions and workshops of this nature can be provided to more MNO citizens. Additionally, there is a lack of process of assessing cumulative effects, especially with respect to the thermal emissions coupled with rising lake temperatures, other thermal influences and nutrient loading on important

#	Section	Page	VCs	Comment
				aquatic life and habitats. Bruce Power has indicated they are in the process of completing a cumulative effects assessment and the MNO requests engagement on that assessment.
29	**Physical stressors** **Impingement and Entrainment** Table 3.9: Number of individual fish impinged by station during 2016 impingement monitoring Table 3.10 Annual Biomass of Age-1 Equivalent Fish Entrained and Impinged at Bruce Power (Bruce A and Bruce B combined) in 2013 and 2014	PDF 243-244 of 457	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Availability of Resources	1134 Rainbow Smelt, 2742 Round Goby and 1843 Yellow Perch were impinged at Bruce A and B in 2016. Yellow Perch is identified as an important species harvested by MNO. Nonetheless, Yellow Perch represents 24% of the total number of fish impinged because of Bruce Power operations in 2016. This aggravation suggests that the offset program including the impingement mitigation measures are not necessarily effective for some MNO Fish Species of Interest, such as Yellow Perch and whitefish. These compounding issues will impact some species of fish greater than others. Further, there is a significant increase in the biomass of total biomass impinged from 219 kg in 2013 to 613kg in 2014. Improvements to Entrainment and Impingements design and mitigation measures would reduce impacts to MNO Fish Species of Interest, traditional uses and harvest rights. We suggest that Bruce Power: • Evaluate options for improving Entrainment and Impingement mitigation measure specifically related to MNO Fish Species of Interest; and • Implement additional mitigation measures to improve the fish Entrainment and Impingement mitigation for MNO Fish Species of Interest. Also, we suggest that CNSC should follow up and report on the status of the implementation of the offsetting measures with a focus on species of interest to the MNO.
30	**Physical stressors** **Context to Lake Huron** In its ERA, Bruce Power has focused on comparing its losses	PDF 247 of 457	**Metis Lands, Resources & Water** • Perception of Change in	Bruce Power's EcoRA focuses on the Lake Huron Commercial fishery, specifically Lake Whitefish and Round Whitefish and doesn't evaluate

#	Section	Page	VCs	Comment
	due to impingement and entrainment to the losses of commercially fished species. The losses of other species relative to other fishing metrics have not been provided. CNSC staff expect Bruce Power to address this gap though CNSC staff is of the opinion that it is not expected to change the conclusions of no unreasonable risk to fish populations and will update the Commission at the Part I Hearing. As stated earlier in this report, the monitoring of the impact of cooling water intake on Deepwater Sculpin was part of the Bruce A Refurbishment EA Follow-up Monitoring Program (element 3.3). The results of follow-up element 3.3 were inconclusive to verify the predictions of the EA due to insufficient information being available on the local population levels of Deepwater Sculpin. The potential impact will continue to be assessed as part of the ERA. DFO has been consulted on this matter since Deepwater Sculpin is SARA-listed. DFO has advised the CNSC that future monitoring of local Deepwater Sculpin populations appears to be warranted and would allow for a future threshold to be set to support the conclusion of no significant risk. CNSC staff recommended that additional entrainment monitoring be completed as part of the environmental monitoring program and that Bruce Power engage with DFO to determine reasonable methods that could be used to increase the understanding of the population of Deepwater Sculpin in the local areas surrounding the Bruce site. Continued oversight of this additional assessment will continue through the ERA and the annual reports on the environmental monitoring program.		• Land or Water Available • Availability of Resources	risks to important MNO fish species. While the Lake Huron Commercial fishery is important to the MNO, Impingent & Entrainment monitoring suggests that Bruce Power operations through the relicensing horizon will impact MNO VCs and important MNO-harvested fish species. In the absence of available data on Indigenous fisheries harvests, some form of benchmarking exercise will be needed to evaluate the extent of the impact of Bruce Power's ongoing operation on MNO harvesting and fisheries including MNO Fish Species of Interest. MNO harvesting and fisheries including the list of MNO Fish Species of Interest provided to Bruce Power through ongoing dialogue should be incorporated into the evaluation of the nature and extent of the impact on the environment. Any benchmarking exercise should incorporate MNO traditional knowledge in an effort to characterize the traditional Aboriginal fishery and Metis rights and interests. Bruce Power should: • Evaluate options for improving Entrainment and Impingement mitigation measure specifically related to MNO Fish Species of Interest; and, • Implement additional mitigation measures to improve the fish Entrainment and Impingement mitigation for MNO Fish Species of Interest. Bruce Power remains committed to having more discussions on this topic with the MNO.
31	**Thermal Effects** "Using the approach outlined above, no warm-water species were exposed to temperatures above benchmarks. For cool-water species, for example, Emerald Shiner and its eggs (in Bruce A discharge), White Sucker eggs (in Baie du Doré), Walleye eggs (in Baie du Doré), Yellow Perch spawning	PDF 249 of 457	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Lack of Use of Land or Water in Proximity to the	The assessment of thermal effects on local fish populations focuses on spawning and avoidance and is silent on risks to aquatic habitat and the cumulative impacts associated with changes water temperatures. In addition to quantifying the thermal impact on MNO Fish Species of Interest, changes to aquatic habitat and cumulative impacts associated with changes to water temperature may influence the MNO VCs.

#	Section	Page	VCs	Comment
	stage and eggs (in Baie du Doré) received temperatures above benchmarks. Bruce Power took an interpretative approach to addressing these instances (e.g., limited spatial and/or temporal extent). For cold-water species, only Lake Whitefish larvae and Round Whitefish eggs received temperatures above benchmark. Both were carried forward for DQRAs. Potential acute and chronic effects were considered. CNSC and ECCC staff expect Bruce Power to develop a winter thermal plume model in order to address this uncertainty in the risk assessment.		Project	The cumulative effect of Bruce Power's thermal emissions coupled with rising lake temperatures, other thermal influences and nutrient (i.e. phosphorus) loading is expected to impact aquatic habitat(s) for mammals, reptiles, amphibians and fish. Bruce Power should: • Evaluate the cumulative effect of Bruce Power's thermal emissions coupled with rising lake temperatures, other thermal influences and nutrient loading on important aquatic habitats for mammals, reptiles, amphibians and fish; and • Develop and implement a comprehensive long-term monitoring program to evaluate the cumulative impacts of thermal emissions. Bruce Power remains committed to having more discussions on this topic with the MNO.
32	Conclusion "CNSC staff concluded, based on the assessment of the most recent ERA, Bruce Power responses to technical comments, and thermal assessment data, that the current operations at the Bruce site will generally pose a negligible to low thermal risk for warm water and cool water fish species. … CNSC staff determined that Bruce Power has provided adequate information concerning the thermal assessment to confirm that thermal effects in the aquatic environment surrounding the Bruce site are not likely posing an unreasonable risk to the environment."	PDF 250 of 457		MNO agrees that a number of uncertainties remain in Bruce Power's assessment of thermal effects related to ongoing operations. CNSC staff's determination that Bruce Power has provided adequate information to conclude that thermal effects in the aquatic environment surrounding the Bruce site are not likely posing an unreasonable risk to the environment does not consider all MNO fish species of interest or risks to MNO traditional uses and harvesting rights. This suggests that isolated releases of cooling water with elevated temperatures are expected to have little to no impact of the Lake Huron Commercial Whitefish Fishery. These results cannot be extrapolated to the cool- and warm-water fish species or localized fish communities in Baie du Dore and the waters around Bruce Power, including MNO Fish Species of Interest. These must be separately characterized to fully understand effects on MNO interests. Additionally, the cumulative effect of Bruce Power's thermal emissions coupled with rising lake temperatures, other thermal influences and nutrient loading is expected to impact aquatic habitat(s) for mammals,

#	Section	Page	VCs	Comment
				reptiles, amphibians and fish. These factors must be considered in the context of cumulative effects.
33	**3.2.5 Human environment** **Representative Persons Determination** "The hunter/fisher catches and consumes wild game and fish. The consumption rates of these foods are greater than that for other individuals, and are representative of local Indigenous people." **Conclusion** CNSC staff reviewed estimated annual doses to all human receptor groups considered in the ERA and concluded that human health is adequately protected as they were well below the public dose limit of 1 mSv. CNSC staff expect Bruce Power to provide further information on beta and gamma emitters in soils and dose due to animal product ingestion to confirm the conservative assumptions used in the Public Dose Assessment."	PDF 252 of 457	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Contamination of Resources • Availability of Resources	A hunter/fisher's dietary consumption may not be appropriate to represent MNO Citizens' as it may underestimate exposure to radiological contaminants for the MNO Citizens who are mobile and both live and harvest in and around the Project vicinity. This mobility could lead to potential dose exposure which is higher than a generic hunter/fisher. MNO citizens and harvesters should have been identified as a distinct receptor group. The assumptions outlined here are in relation to a First Nation community 20km north of the project site. These assumptions are not the same for MNO Citizens. To that end, we recommended that Bruce Power develop and complete an MNO diet study be to understand MNO Citizens' dietary habit and consumption to ensure the potential radiological effects to the MNO Citizens are properly assessed. MNO and Bruce Power are currently in discussions to action this recommendation. Similarly, an assessment of avoidance of whitefish based on perceived contaminants must be considered because perceptions may lead to dietary changes that either reduce diet quality or increase diet cost.
34	**Public Dose Results** "The breakdown of this upper range dose by radionuclide and pathway are shown in tables 3.16 and table 3.17."	PDF 253 of 457		Tables 3.16 and table 3.17 are not found in this EA document.
35	**3.3 Environmental Effects Assessment-MCR Activities** "Topics were selected by CNSC staff as being of interest for the Commission, members of the public and Indigenous communities, or of regulatory interest, which include air, water, soil, fish and human health."	PDF 255-262 of 457	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Perceived Contamination of Resources • Perceived Pollutants in	There is a lack of consideration of MNO VCs as potential receptors. There is no discussion in this, or subsequent sections, about increased avoidance behaviors and sensory disturbances due to perception of exposure to radiation and chemical dosage.

#	Section	Page	VCs	Comment
			the Environment • Availability of Resources	
36	**3.3.4 Aquatic Environment** **Aquatic Biota** "The EA for the Bruce A Units 1 and 2 Refurbishment Project [19] predicted an increase in winter water temperatures at Loscombe Bank, which is a cobble shoal that occurs approximately 2.5 km northwest of the Bruce site. As part of the EA follow up program, monitoring was required to verify predictions that temperatures would be within +/- 2°C of predicted temperatures taking into consideration natural variability. Substrate temperatures collected prior to refurbishment activities (2004-2005) were compared to those collected during the first year of operations (2013), and there were no overall significant differences observed. Thermal effects generally pose a low risk to aquatic biota resulting from normal operations on the site, including MCR activities. … Bruce Power's PEA asserted that the volume and rate of the cooling water intake as Bruce A and B during the proposed licensing period will not be greater than the volume and rate in 2013 and 2014, and therefore the fish impingement and entrainment losses for those years represents a bounding case for future fish loss due to the cooling water intake. Therefore, the predicted loss of fish from cooling water intake at the Bruce site for future operations during the upcoming licensing period is predicted to result in a negligible risk to fish populations in Lake Huron, given the small percentage of biomass lost relative to the size of local fish populations."	PDF 263 of 457	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Availability of Resources	The assessment of thermal effects on local fish populations focuses on spawning and avoidance and is silent on risks to aquatic habitat and the cumulative impacts associated with changes in water temperatures. In addition to quantifying the thermal impact on MNO Fish Species of Interest, changes to aquatic habitat and cumulative impacts associated with changes to water temperature may influence MNO VCs. Further, the measurable effects resulting from MCR activities, albeit short durations, cannot be overlooked. Given the fact that there was a significant increase in the total biomass impinged from 219 kg in 2013 to 613kg in 2014, the assertion that "the volume and rate of the cooling water intake as Bruce A and B during the proposed licensing period will not be greater than the volume and rate in 2013 and 2014, and therefore the fish impingement and entrainment losses for those years represents a bounding case for future fish loss due to the cooling water intake" does not seem to have taken into consideration the additional MCR activities. Therefore, the prediction that the loss of fish from cooling water intake for future operations would result in a negligible risk to fish population is worrisome. Bruce Power should: • Develop and implement a comprehensive long-term monitoring program to evaluate the cumulative impacts of thermal emissions. • Evaluate options for improving Entrainment and Impingement mitigation measure specifically related to MNO Fish Species of Interest; and

#	Section	Page	VCs	Comment
				• Implement additional mitigation measures to improve the fish Entrainment and Impingement mitigation for MNO Fish Species of Interest. Bruce Power remains committed to having more discussions on this topic with the MNO.
37	**3.3.5 Human Environment Conclusion** "Estimated annual doses to all human receptor groups considered in the predicted affects assessment were below the annual public dose limit of 1 mSv. No health effects are expected to be observed at this dose. Additionally, the non-radiological human health risk assessment evaluated the potential for health risks for members of the public, and the potential for health risks due to non-radiological chemicals and physical stressors (i.e., noise) were shown to be negligible considering normal operations at the Bruce site. Therefore, CNSC staff concluded that human health will be adequately protected during MCR activities."	PDF 265 of 457		MNO citizens and harvesters should have been identified as a distinct receptor group. Further, there is a lack of consideration of Metis VCs as potential receptors. This is problematic as Métis harvesters near the Project would be affected by noise. The HHRA did not consider perceptive effects related to noise as a physical stressor on MNO Citizens. There is no discussion about increased avoidance behaviors and sensory disturbances due to perception of exposure to radiation and chemical dosage.
38	**4.0 CNSC Independent Environmental Monitoring Program** "The CNSC has implemented its IEMP to verify that the public and the environment around licensed nuclear facilities are protected. For future IEMP sampling plans in the Bruce area, the CNSC will collaborate with local Indigenous groups to determine how best to collect samples that will provide meaningful results."	PDF 265 of 457		As noted, a sampling work plan should be developed in consultation with the MNO. The MNO should request further discussions and capacity funding regarding future IEMP samplings. To that end, we suggest that an actionable workplan be discussed as to how to coordinate and connect the MNO's Annual Monitoring Program, Bruce Power's monitoring and CNSC's IEMP.
39	**6.0 Recommendations and Conclusions** "This EA under the NSCA focused on items of current public and regulatory interest, including physical stressors, releases to air, groundwater and surface water from ongoing operations and those related to the proposed MCR project for the purpose of extending the operational life of Bruce A and B. CNSC staff concluded that the potential risk from physical stressors and	PDF 275 of 457	**Metis Lands, Resources & Water** • Perception of Change in Land or Water Available • Availability of Resources	The regulatory requirements that Bruce Power's environmental protection measures are being evaluated against are protective of the human health and the natural environment but they have not considered traditional uses and harvesting rights of the MNO. The ERA and PEA completed build on previous environmental risk assessment and environmental monitoring technical work that was scoped prior to meaningful consultation with the MNO.

	radiological and non-radiological COPCs releases to the atmospheric, terrestrial, hydrogeological, aquatic and human environment are low to negligible. The EA report did identify actions for Bruce Power to undertake to confirm these conclusions, based on staff's review of Bruce Power's ERA and related information, as of the end of January 2018. … CNSC staff requested that future updates to the ERA provide clarification and/or additional information. Specifically, Bruce Power is to provide, through modifications and/or enhancements of their existing environmental monitoring program or through updates to the ERA, the following: • future monitoring and assessment to address potential risks to aquatic and semi-aquatic receptors utilizing the South Railway Ditch and the former sewage lagoon • **future monitoring of impingement and entrainment to reduce data uncertainties, including entrainment monitoring of Deepwater Sculpin and to refine the conclusions on potential impacts via the cooling water intake** • a winter thermal plume model and action plan to reduce uncertainties related to potential risk to fish species • future monitoring and assessment to address knowledge and data gaps in bird, plant, invertebrate, fish and wildlife exposure to COPCs, including hazardous contaminants, alpha emitters, C-14, tritium and organically bound tritium, and other radionuclides to reduce uncertainty in the ecological risk assessment further information on beta and gamma emitters in soils and dose due to animal product ingestion to confirm the conservative assumptions used in the human health radiological risk assessment"			The Scope of the Ecological Risk Assessment must be expanded to consider MNO rights and interests including traditional uses. MNO requests that updates, modifications and/or enhancements to existing environmental monitoring programs incorporate findings of the MNO's VCs Monitoring Report. Integrating MNO VCs into monitoring programs will connect technical studies with the perceptions of MNO citizens. On-Site water features including the South Railway ditch and the former sewage lagoon represent likely habitats related to important Métis-harvested resources. Monitoring and assessment of potential risks to aquatic and semi-aquatic receptors utilizing on-Site water features should consider traditional uses and harvesting rights of the MNO. Impingement and entrainment monitoring suggests that impingement mitigation measures are less effective for some MNO Fish Species of Interest. For example, Yellow Perch represents 24% of the total number of fish impinged because of Bruce Power operations in 2016. Improvements to Entrainment and Impingements design and mitigation measures would reduce impacts to MNO Fish Species of Interest, traditional uses and harvest rights. Beyond expanding entrainment monitoring to include Deepwater Sculpin, we request that Bruce Power: • Evaluate options for improving Entrainment and Impingement mitigation measure specifically related to MNO Fish Species of Interest; and, • Implement additional mitigation measures to improve the fish Entrainment and Impingement mitigation for MNO Fish Species of Interest. The assessment of thermal effects on local fish populations focuses on spawning and avoidance and is silent on risks to aquatic habitat and the cumulative impacts associated with changes water temperatures. In addition to quantifying the thermal impact on MNO Fish Species of Interest, changes to aquatic habitat and cumulative impacts associated

#	Section	Page	VCs	Comment
				with changes to water temperature will influence MNO VCs and must be addressed. Bruce Power remains committed to having more discussions on this topic with the MNO.
Draft Licence Conditions Handbook (LCH) (CMD 5371085)				
40	~AIL~			Despite the fact that Crown's duty to consult is triggered, there is no licensing condition that addresses any "Aboriginal concerns" or provides any opportunity to bring concerns forward and have them addressed by a License Condition. Our suggestion to the Commission is that a License Condition to that effect should be included.