Impact Assessment Agency of Canada | Agence d'évaluation d'impact du Canada

Suite 200
1801 Hollis Street
Halifax NS B3J 3N4

Bureau 200
1801 rue Hollis
Halifax NS B3J 3N4

March 1, 2021

Sent by E-mail

Ken Swain
Project Leader
Nova Scotia Lands Inc.
Halifax, NS Canada
Email: Ken.Swain@novascotia.ca

Dear Ken,

SUBJECT: Boat Harbour Remediation Project – Information Requirements

The Impact Assessment Agency of Canada (Agency) is completing its technical review of the Environmental Impact Statement (EIS) and associated EIS Summary for the proposed Boat Harbour Remediation Project. The Agency has determined that information is required to complete its assessment, as per the information requirements (IRs) attached.

The Agency has recently received comments from Health Canada and the final report from the External Technical Review, and is still reviewing these submissions. In addition, the Agency anticipates Pictou Landing First Nation's submissions shortly. The Agency may issue additional IRs once these reviews are complete, along with a table of advice.

With the issuance of these IRs, the federal timeline within which the Minister of Environment and Climate Change must make a decision is suspended as of March 2, 2021. Once Nova Scotia Lands Inc. has submitted all responses, the federal timeline for the environmental assessment will resume.

The responses to IRs may be in a format of your choice; however, the format must be such that the responses to individual IRs can be easily identified. You may wish to discuss certain IRs with the Agency or other government experts, as necessary, to obtain clarification or additional information, prior to submission of the responses. Working directly with government experts in this manner will help to ensure that IRs are responded to satisfactorily. The Agency can assist in arranging meetings with government experts, at your request.

The IRs and your responses will be made public on the Canadian Impact Assessment Registry Internet site: https://iaac-aeic.gc.ca/050/evaluations/proj/80164.

Please confirm receipt of this message and contact me if you require further information.

Sincerely,

<Original signed by>

Lachlan Maclean
Project Manager – Atlantic Regional Office
Impact Assessment Agency of Canada

Cc: Chief Andrea Paul – Pictou Landing First Nation
Stephen Zwicker – Environment and Climate Change Canada
Sean Wilson – Fisheries and Oceans Canada
Jason Flanagan – Transport Canada
Jeffrey Reader – Health Canada
Bridget Tutty – Nova Scotia Environment
Beth Lewis – Office of Aboriginal Affairs

Attachment 1 - Information Requirements for the Boat Harbour Remediation Project.

Boat Harbour Remediation Project
Information Requirements for the Environmental Impact Statement Review:
March 1, 2021

INTRODUCTION

The Impact Assessment Agency of Canada (the Agency) is completing its technical review of the Environmental Impact Statement (EIS) and associated EIS Summary for the proposed Boat Harbour Remediation Project. The Agency's review is supported by submissions from government experts, Pictou Landing First Nation, and an External Technical Review. The Agency determined that information is required, as per the information requirements (IRs) below.

ACRONYMS AND SHORT FORMS

Agency	Impact Assessment Agency of Canada
ASB	Aeration Stabilization Basin
BHETF	Boat Harbour Effluent Treatment Facility
CCME	Canadian Council of Ministers of the Environment
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DFO	Fisheries and Oceans Canada
ECCC	Environment and Climate Change Canada
EIS	Environmental Impact Statement
ERA	Ecological Risk Assessment
LIDAR	Light Detection and Ranging
NSDFA	Nova Scotia Department of Fisheries and Aquaculture
NSE	Nova Scotia Environment
NSL&F	Nova Scotia Department of Lands and Forestry
SARA	*Species at Risk Act*
TLTF	Temporary leachate treatment facility
TSS	Total Suspended Solids
VC	Valued component

ATTACHMENT 1: INFORMATION REQUIREMENTS FOR THE BOAT HARBOUR REMEDIATION PROJECT

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
EA Methods					
IAAC-01	IAAC	Part 1, Section 4.3 Part 2, Section 7.5	Sections 7.2.6 7.3.1.6 7.3.2.6 7.3.3.7 7.3.4.6 7.3.5.5 7.3.6.6 7.3.7.6 7.3.8.6 7.3.9.6 7.3.10.6 7.3.11.5 7.3.12.5 7.3.13.5 7.3.14.5 7.3.15.6 7.3.16.7 7.3.17.5 7.3.18.5	The EIS Guidelines require a description of the methodology used to assess project-related effects, and to include an analysis of the pathway of the effects of environmental change on each valued component (VC). Part 2, Section 7.5 of the EIS Guidelines requires the predicted changes to the environment to be described in terms of the magnitude, geographic extent, duration and frequency, and whether the environmental changes are reversible or irreversible. As per the Agency's document, *Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under CEAA 2012*, and referenced in Part 2 Section 7.5 of the EIS Guidelines, the magnitude of an environmental effect should be expressed in measurable or quantifiable terms, whenever possible. There may be multiple measurable parameters relevant to a VC. When using quantitative or qualitative descriptions of magnitude, clear definitions of terms should be provided. The definition of these terms may vary according to the VC under consideration. The EIS describes magnitude categories of environmental effects in general terms in Table 7.2-4. The EIS also states that where possible, criteria are described quantitatively; however, magnitude is not defined quantitatively for any VC. The EIS provides minimal information regarding the methodology followed to determine the significance of project-related effects. In the significance of residual effects section for each VC in the EIS, no quantitative measures or qualitative descriptions to justify or explain the rankings of the residual environmental effects characteristics (e.g., magnitude, geographic extent, timing, duration, frequency, reversibility, ecological or social context) are provided. A rationale is critical for the Agency and other readers to understand the basis for the proponent's determination, so that it can be assessed objectively.	Describe the methodology and provide the rationale used to assess the significance of project-related effects (e.g., magnitude, geographic extent, timing, duration, frequency, reversibility, and ecological or social context). Provide VC-specific definitions of each category of magnitude, using quantifiable terms when possible. Update section 7 of the EIS with VC-specific definitions and revise the environmental effects assessment for each VC based on the newly defined magnitude categories.
IAAC-02	IAAC	Part 1, Section 3.2.2	Section 7.3.10.2 Table 7.2-2 Table 7.3-186 Table 7.4-26	The EIS Guidelines require that spatial boundaries be defined taking into account the appropriate scale and spatial extent of potential environmental effects. The EIS contains contradicting information about whether effects on mammals and wildlife will occur within the Site Study Area or extend to the Local Study Area. Table 7.2-2 and Section 7.3.10.2 state that effects from the Project on mammals and wildlife will be confined to/potentially occur within the Site Study Area.	Clarify the discrepancy in the spatial boundary for effects on mammals and wildlife and update the effects assessment as applicable.

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
				However, Table 7.3-186 lists disturbances to mammals and wildlife, caused by project activities related to the dam decommissioning, as a residual effect of the Project that will extend to the Local Study Area. Table 7.4-26 also states that the potential for adverse residual effects to mammals and wildlife occurs within the Local Study Area. This contradiction must be resolved for the Agency to assess the potential effects of the Project on mammals and wildlife.	
Project Components					
IAAC-03	NSE	Part 2, Section 3.2 Part 2, Section 7.2.2	Section 7.3.6.4.1	The EIS Guidelines require a description of the project activities, including activities associated with the containment cell modifications. Sufficient information must be included to predict environmental effects, with an emphasis on activities that involve periods of increased environmental disturbance or the release of materials into the environment. Section 3.2.1.1 of the EIS states that the containment cell and leachate collection and liner systems will be upgraded prior to receiving additional waste from the remedial activities. During the upgrade, the existing waste will be temporarily relocated to either existing site infrastructure, such as the settling basins or aeration stabilization basin (ASB), or to newly constructed staging areas. The EIS does not provide information explaining how the waste temporarily stored in the ASB or settling basin would be kept from interacting with the surface water and surficial groundwater that currently discharges into those areas. Furthermore, the EIS does not provide information related to the option of storing the waste in a new staging area, including the construction, location, and leachate collection of the new staging area. This information is required to assess potential effects on surface water (including wetlands) and groundwater from the relocation of existing waste.	Clarify how the existing containment cell waste, if transported to the ASB or settling basins, will be isolated to prevent interactions with the surface water or surficial groundwater. Should waste be temporarily stored in a new staging area, provide information on the design of this area (e.g., location on a site map, construction and leachate collection, additional mitigation measures) and evaluate the potential effects.
IAAC-04	NSE	Part 2, Section 3.1	Table 1.4-1 Anticipated Federal Legislative and Regulatory Requirements Table 1.4-2 Anticipated Provincial Legislative and Regulatory Requirements	The EIS Guidelines require information about the management of proposed control, collection, treatment, and discharge of surface drainage and groundwater seepage to the receiving environment from all key components of the project infrastructure, including sludge disposal cell effluent. The EIS refers to leachate pretreatment in Tables 1.4-1 and 1.4-2; however, this process is not described in any further detail. It is unclear how pretreatment would be utilized (e.g., nature of that pretreatment). Details about this pretreatment process are required to assist in understanding the potential environmental effects.	Provide information about the leachate pretreatment processes, including the intended effect, actual means, and verified performance.
IAAC-05	ECCC NSE	Part 2, Section 3.1	Section 3.1.4 Section 3.2	The EIS Guidelines require a description of the Project components, associated and ancillary works, and other characteristics that will assist in understanding the environmental effects.	Clarify the point of discharge of effluent from the TLTF and clarify whether effluent will undergo mixing in Boat Harbour prior to being discharged into the receiving environment.

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
				Section 3.1.4 of the EIS states: "Treated effluent from the TLTF that meets the appropriate discharge criteria would be conveyed to the discharge point of the BHSL to the estuary." Section 3.2 of the EIS states: "A floating pipeline would also be used for conveyance of treated interim leachate treatment system effluent to the approved discharge point…" The location of the discharge point for the treated effluent is not clear. It is also not clear if effluent from the temporary leachate treatment facility (TLTF) will be released into Boat Harbour and mixed with bulk water prior to discharge into the estuary, or if the effluent will discharge directly into the estuary via the pipeline, with no mixing in Boat Harbour. An understanding of the overall wastewater flows and management is required to understand the potential effects of the Project.	
Water Quality and Fish and Fish Habitat					
IACC-06	DFO	Part 2, Section 7.1.6	Section 7.1.6.2 Table 7.1-31	The EIS Guidelines require a description of the marine environment in the estuary and along the strait shorelines immediately outside of the mouth of Boat Harbour, including: • marine fauna, including benthic organisms, fish, marine mammals and sea turtles and their associated habitat; and • federally and provincially listed marine species at risk. Table 7.1-31 lists fish species caught within the estuary and does not list Striped Bass. In Section 7.1.6.2, a statement is made that Striped Bass were observed within the estuary. There appears to be a discrepancy between the two sections of the EIS. Section 7.1.6.2 refers to a fish survey, but does not describe the methodology used. This information is needed to assess the potential impacts on the marine environment and fish and fish habitat.	Describe the methodology used for the fish survey mentioned in Section 7.1.6.1.1. of the EIS. Clarify if Striped Bass were caught or observed within the estuary, and reconcile or provide rationale for the discrepancy of fish species in Table 7.1-31 and Section 7.1.6.2 of the EIS.
IAAC-07	DFO	Part 2, Section 3.2.3	Section 3.1	The EIS Guidelines require an outline of a decommissioning and reclamation plan for any components associated with the Project. Table 7.3-151 (page 7-415) of the EIS notes that a reclamation program will be undertaken to re-establish native riparian vegetation communities; however, an outline has not been provided. Riparian resources such as trees, shrubs, and other vegetation provide important fish habitat functions, including stability, shade, food sources, and shelter. A preliminary outline of the reclamation plan that provides any information or commitments regarding fish habitat conditions at the site is needed to assess the potential impacts of the Project on fish and fish habitat.	Provide the preliminary outline for the reclamation plan to re-establish native riparian vegetation communities.

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
IAAC-08	DFO	Part 2, Section 7.1.7	Section 7.1.6.2	The EIS Guidelines require a description of natural obstacles (e.g. falls, beaver dams) or existing structures (e.g. water crossings) that hinder the free passage of fish. Page 7-133 of the EIS states: "An overall assessment of fish passage reveals that several streams have impediments due to physical barriers (natural or created through the course of creating and operating Boat Harbour) or water levels/elevation issues that prevent movement from Boat Harbour to the watercourses and within watercourses in many cases." The EIS does not identify which watercourses have barriers, what the barrier is, and where the barrier is located. Additional details are required to confirm physical barriers are present. DFO has noted that water levels in Nova Scotia can fluctuate seasonally and so cautions the use of water levels alone to conclude a physical barrier unless multi-year, multi-season observations have been made. This information is needed to assess the potential effects of the Project on fish and fish habitat.	Provide information on the location of each physical barrier, identify the type of barrier, and explain how conclusions were reached regarding the status of fish passage of each barrier.
IAAC-09	DFO	Part 2, Section 7.1.7	Section 7.1.6.2.1	The EIS Guidelines require a description of primary and secondary productivity in affected water bodies with a characterization of seasonal variability. Page 7-139 of the EIS states, in relation to primary and secondary productivity, that "[g]iven these watercourses are very small in width and channel depth, these watercourses will not be discussed further." DFO notes that watercourses of any size can play an important role in a variety of functions, including primary and secondary productivity (see Wohl, 2017[1]). Therefore, watercourses should be fully assessed prior to reaching such conclusions. This information is needed to assess the potential effects of the Project on fish and fish habitat.	Provide a description of primary and secondary productivity, including seasonal variability, for the previously dismissed watercourses. Alternatively, provide a justification as to why this information is not needed.
IAAC-10	DFO	Part 2, Section 7.3.1	Section 7.3.12	The EIS Guidelines require information on how project construction timing correlates to key fisheries windows of any sensitive life history stages for freshwater and anadromous species, and any potential effects resulting from overlapping periods. This information, including instream work window dates, was not provided. This information is needed to assess the potential impacts of the Project on fish and fish habitat.	Provide key timing windows for freshwater and anadromous species found within the Study Area and compare these with the timing of project construction activities. As applicable, update the effects assessment and mitigation measures for fish and fish habitat or provide the Agency with rationale as to why this is not required.
IAAC-11	DFO	Part 2, Section 7.1.7	Section 7.1.6.2	The EIS Guidelines require a description and location of suitable habitats for fish species at risk that are present or likely to be found in the study area.	Clarify the definition of "site" as used in Table 7.1-34 and update the effects assessment as applicable.

[1] Wohl, E. The significance of small streams. *Front. Earth Sci.* **11,** 447–456 (2017). https://doi.org/10.1007/s11707-017-0647-y

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
				Table 7.1-34 refers to the likelihood of fish species as "Habitat Present or Absent at Site". It is unclear if the site being referred to is the Site Study Area, the Local Study Area, or the Regional Study Area. This information is required to complete the effects assessment of fish and fish habitat.	
IAAC-12	DFO	Part 2, Section 7.1.7	Section 7.1.6.2	The EIS Guidelines require a characterization of fish populations on the basis of species and lifestage for potentially affected surface waters. The EIS makes the following statement in Section 7.1.6.2: "The majority of watercourses at the Boat Harbour Effluent Treatment Facility (BHETF) site lack the appropriate physical habitat features to sustain populations of adult Brook Trout." The EIS provides some information to support this statement; however, references to peer-reviewed literature were not provided. This information is needed to assess the potential effects of the Project on fish and fish habitat.	Provide supplementary information (e.g., peer-reviewed literature) to support the statement that the physical habitat at the BHETF lacks the appropriate features to support adult Brook Trout populations.
IAAC-13	ECCC	Part 2, Section 3.1 Part 2, Section 7.2.2	Section 3.1.1	The EIS Guidelines require a description of potential changes to groundwater and surface water, including the seepage water quality from the landfill during remediation and long-term storage. Page 3-5 of the EIS states: "When comparing the forecasted leachate quality to groundwater criteria, lead and zinc are the only parameters to exceed the criteria, and therefore are carried forward as contaminants of concern with regards to the service life." However page 3-41 of the EIS states the following: "The existing leachate contains elevated concentration as compared to criteria for chloride, ammonia, nitrite and nitrate, as well as select metals including aluminum, arsenic, cadmium, chromium, copper, iron, lead, mercury, silver and zinc, based on the containment cell – BHETF – 2018 Monitoring Report (Dillon, 2019)"; "The contaminants of concern in the effluent based on pilot and bench scale testing include PHCs, dioxins and furans, cyanide, and metals (i.e., cadmium, chromium, copper, lead, mercury, and zinc.)"; and finally "Contaminants of concern would include those listed above for both existing leachate and dewatering effluent." It is unclear from the statements above why lead and zinc were the only parameters carried forward as contaminants of concern in the predicted leachate quality. This information is needed to better understand potential changes to groundwater and surface water from the Project, which can impact Mi'kmaq of Nova Scotia health, fish and fish habitat, and the marine environment.	Provide a reference to where the "forecasted leachate quality" is provided. Carry forward the other contaminants of concern identified on page 3-41 of the EIS as contaminants or concern and update the effects assessment as applicable. Alternatively, provide a justification as to why lead and zinc are the only parameters carried forward as contaminants of concern.

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
IAAC-14	DFO ECCC NSDFA NSE	Part 2, Section 7.1.6 Part 2, Section 7.2.2	Section 7.3.6 Section 7.1.6.1.1 Section 7.1.6.2 Section 7.3.7.4.3 Section 7.3.7.6 Appendix Z – Coastal Hydraulic Modeling (WSP 2020; Appendix Z)	The EIS Guidelines require a detailed description of the baseline conditions to assess the potential changes to the marine environment in the estuary and along the Northumberland Strait shorelines immediately outside of the mouth of Boat Harbour, including potential changes to: • marine water quality; • marine plants, including all benthic and detached algae, marine flowering plants, brown algae, red algae, green algae, and phytoplankton; • marine fauna, including benthic organisms, fish, marine mammals and sea turtles and their associated habitat; and • federally and provincially listed marine species at risk. Section 7.1.6.1.1 of the EIS describes the estuary and Pictou Road shorelines at a very high level and appears to be based on land and wetland surveys with no discussion of the marine benthic habitats. It is not clear from the EIS if the proponent incorporated Indigenous and local knowledge baseline information into the marine environment and fish and fish habitat assessments. The Coastal Hydraulic Modeling Report in Appendix Z of the EIS includes modelling for a potential increase in total suspended solids (TSS) based on the Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Aquatic Life (Marine). The modelling predicts an increase in TSS, well above the CCME guidelines of 25 mg/L above background levels, flowing into the estuary and strait for at least one year after the dam is removed and Boat Harbour is returned to tidal. The EIS determined that the effects on surface water are not significant; however, Appendix Z is not referenced in this analysis. DFO has noted that sensitive receptors, such as eelgrass beds, could be reduced or lost as a result of elevated TSS. Elevated concentrations of suspended sediment and increased turbidity may result in adverse effects in as little as days and biomass reductions in months. The Nova Scotia Department of Fisheries and Aquaculture stated that the commercial industry has expressed concerns with potential impacts of the Project on water quality. Information about how fisheries resources such as aquaculture and seafood facilities may be impacted by the potential increase in TSS is required. The Coastal Hydraulic Modeling Report indicates that approximately 140,000 m^3 of sediment leaves the modeled domain with an unknown end point. The model domain does not address potential effects to nearby marine habitat. Figure 5.16 in the Coastal Hydraulic Modelling Report shows the sediment anticipated to be deposited on the sea floor in the Pictou Road area; however, the sediment deposition thickness is unclear.	Provide more detailed information on the baseline conditions in the estuary and the Northumberland Strait shorelines immediately outside of the mouth of Boat Harbour. Use this information and the results of the WSP 2020 Coastal Hydraulic Modeling Report (Appendix Z) to update the effects assessment of surface water, marine environment, and fish and fish habitat. This should include a discussion of the impacts from both water column increases in TSS and deposition of sediment on: • marine water quality; • marine plants, including all benthic and detached algae, marine flowering plants, brown algae, red algae, green algae, and phytoplankton; • marine fauna, including benthic organisms, fish, marine mammals and sea turtles and their associated habitat; • federally and provincially listed marine species at risk; and • fisheries resources, such as aquaculture and seafood facilities. For the WSP 2020 Coastal Hydraulic Modeling Report: • Expand the model to include nearby marine habitat, provide the revised model results and update any relevant information such as the effects assessment based on those results. Alternatively, justify why the current model domain is sufficient. Provide sediment deposition thickness data for the marine environment in the Pictou Road area and update any relevant information such as the effects assessment, mitigation measures, and follow up monitoring.

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
				This information is important for assessing the potential effect of an increase in TSS on water quality, the marine environment, and fish and fish habitat - including the commercial fishing industry.	
IAAC-15	NSE	Part 2, Section 7.2.2	Section 7.3.6 Appendix Z	The EIS Guidelines require that the proponent clearly describe how mitigation measures will be implemented and how a follow-up program would be designed to determine the effectiveness of the mitigation measures. It is unclear how confinement of suspended sediments to the area undergoing dredging will be demonstrated, and how areas outside the silt curtains, including those already remediated, will not be impacted. Section 7.3.7.4.2 of the EIS needs to provide specific details around the use of silt curtains as a mitigation measure, including the type of curtain, uncertainty around effectiveness, and additional mitigation measures that can be implemented, if required. Details on the monitoring and sampling program that will be used to verify silt curtain effectiveness during dredging activities should also be provided. Without the specific details on the monitoring and sampling program, it is difficult to assess whether the proposed mitigation approach is reasonable.	Provide additional details on the use of silt curtains to mitigate the potential redistribution of contaminants in surface waters through the resuspension of sediments during remediation activities, including: • what type of curtain will be used and why; • the uncertainty in the effectiveness of this type of mitigation measure; • what additional mitigation measures can be implemented if the silt curtains fail; and • how silt curtain effectiveness will be verified.
IAAC-16	DFO	Part 2, Section 7.1.6	Appendix BB – Marine Environment Baseline – NSCC 2017 Topo-Bathymetric Lidar Research to support remediation of Boat Harbour	The EIS Guidelines require a description of the marine environment in the estuary and along the strait shorelines immediately outside of the mouth of Boat Harbour. Ground truth analysis was used to validate the Light Detection and Ranging (LIDAR) data in Appendix BB of the EIS. The majority of the ground truth data are not evenly distributed throughout the LIDAR study area, with few located immediately outside of Boat Harbour or within the area predicted to be impacted in the sediment transport modeling conducted by WSP (2020) in Appendix Z. The uneven distribution of the ground truth points may bias the LIDAR data outputs. In addition, sediment and vegetation mapping was created using LIDAR data; however, ground truthing showed some classifications were not accurate (e.g., mud with only 25% agreement). This information is required to assess the potential effects on the marine environment and fish and fish habitat, including the commercial fishing industry.	Provide justification as to why the ground truth data points were not evenly distributed throughout the LIDAR study area. Provide evidence that the uneven distribution of ground truth points did not bias the LIDAR data outputs. Explain how the sediment and vegetation mapping was created, given some ground truth classifications were not accurate, and how any uncertainty was factored into the effects assessment for the marine environment and fish and fish habitat.
IAAC-17	DFO	Part 2, Section 7.1.6 Part 2, Section 7.3.3 Part 2, Section 7.3.4	Section 7.1.6.1 Appendix BB NSCC 2017 Topo-bathymetric LIDAR Research report	The EIS Guidelines require a description of the marine environment in the estuary and along the strait shorelines immediately outside the mouth of Boat Harbour, including marine plants. The presence of eelgrass is identified in Section 7.1.6.1.1 of the EIS but no further details about its location or extent is discussed. Although the 2017 NSCC Topo-bathymetric LIDAR Research Report (Appendix BB), including maps 3-19 to 3-21, clearly show bottom type classifications and eelgrass distribution within the LIDAR	Update the effects assessment for the marine environment and fish and fish habitat to include the findings of the 2017 NSCC Topo-bathymetric LIDAR Research Report. Alternatively, describe how information contained in the Report, including maps 3-19 to 3-21, has been used in identifying and understanding potential changes in the marine environment and fish and fish habitat.

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
				study area, it is unclear if this information was used in the EIS to assess potential impacts to the marine environment and fish and fish habitat. Marine plants such as eelgrass provide important nursery habitat for many aquatic species. Appendix BB provides a clear understanding of the location of sensitive receptors and should be included in the effects assessment on the marine environment and fish and fish habitat.	
Migratory Birds and Species at Risk					
IAAC-18	IAAC ECCC	Part 2, Section 7.3.5	Section 7.3.13.5	The EIS Guidelines require the EIS to identify direct and indirect effects to migratory birds. As per the Agency's document, *Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under CEAA 2012*, geographic extent is one of the key criteria for determining significance. Geographic extent is intended to describe the spatial area over which an environmental effect is predicted to occur and should be quantitative whenever possible. The EIS does not describe the prediction of temporary or permanent bird habitat loss quantitatively. A quantitative prediction of temporary or permanent bird habitat loss (e.g. hectares of habitat change) is required to assess the effects of the Project on migratory birds and the significance of the effects.	Update the effects assessment on migratory birds to include a quantitative prediction of temporary or permanent bird habitat loss.
IAAC-19	NSL&F	Part 2, Section 7.1 Part 2, Section 7.1.4	Appendix AA, Wildlife and Habitat Baseline Review, Section 3.3.1	The EIS Guidelines require a description of riparian, wetland, and terrestrial environments, including a description of animal species and their habitats with a focus on species at risk, species of conservation concern, and species that are of social, economic, cultural, or scientific significance. Wood turtles are listed as threatened under the *Species at Risk Act* (SARA) and by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Section 3.3.1 of the Wildlife and Habitat Baseline Review (Appendix AA) states that wood turtle surveys were completed between the months of May and June, and during the duration of the survey, no wood turtles were observed. The Department of Lands and Forestry notes that turtle surveys should be done twice a year (once in spring, once in fall) to capture peak activity periods for the species.	Given that peak activity periods for wood turtles occur in spring and fall, and wood turtle surveys were not completed during the fall, provide specific mitigation measures for wood turtles assuming their presence at suitable habitat locations. Update the effects assessment as appropriate. Alternatively, provide evidence to justify the conclusions in the EIS that no wood turtles occur in the Project area, given that fall surveys were not completed.
IAAC-20	IAAC NSE NSL&F	Part 2, Section 7.4	Section 7.3.14.3 Section 7.1.5.1 Appendix B (Project Environmental Protection Plan Sections 5.2.3 and 7.5.11)	The EIS Guidelines state that the EIS will identify and describe mitigation measures to avoid, or lessen potential adverse effects on species and/or critical habitat listed under SARA as well as those for listed COSEWIC species. Section 7.1.5.1 of the EIS states "Black Ash was observed in localized areas in the southern portion of the Site Study Area and is believed to have been planted and not naturally occurring. Discussions with PLFN indicated that Black Ash (known as Wisqoq in Mi'kmaw) was planted in the area a few years ago."	Provide mitigation measures for Black Ash, which is located within the Site Study Area, and listed under SARA and COSEWIC. Update the effects assessment to include Black Ash and determine the significance of those effects on Black Ash.

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
			Appendix AA (Wildlife and Wildlife Habitat Baseline Review)	Black Ash was listed by COSEWIC as Threatened in 2018 and it is being considered for listing on Schedule 1 of SARA, pending Indigenous and public consultation. While the SARA prohibitions currently do not apply, Black Ash is known to be culturally significant to indigenous peoples and ECCC – Canadian Wildlife Service recommends that COSEWIC species are assessed as though they were listed. Mitigation measures for species at risk detailed in Section 5.2.3 of the Project Environmental Protection Plan in Appendix B are focused on wildlife and do not provide any details on how Black Ash would be protected from the effects of project activities. Appendix AA (Wildlife and Wildlife Habitat Baseline Review) of the EIS also notes that Black Ash was located at two sites in the vicinity of wetland WL-10 and watercourses WC-6 and WC-4. The Agency notes that if Black Ash is located in a wetland, the wetland may be considered a provincial Wetland of Special Significance, regardless of the planted origin of the species. Refer to the provincial recovery plan for guidance on how to protect Black Ash and its habitat. This information is needed to assess the potential effects of the Project on species at risk and listed COSEWIC species.	
IAAC-21	ECCC NSL&F	Part 2, Section 7.1.8 Part 2, Section 7.4	Section 7.1.7 Appendix CC, Section 2.1, Table 2.2, Section 2.3.4, Figure B3	The EIS Guidelines require descriptions of birds and their habitats that are found, or likely to be found, in the study area. The EIS Guidelines also require the EIS to identify and describe mitigation measures to avoid, or lessen, potential adverse effects on species and/or critical habitat listed under SARA. The EIS used the Canadian Nightjar Survey Protocol to collect baseline data for the Common Nighthawk. The Canadian Nightjar Survey Protocol may not be appropriate, given that it is designed to estimate trends over time from fixed points in subsequent years. In addition, the survey data for Common Nighthawk appears to be incomplete, specifically in the northern section of the Site Study Area between the stabilization lagoon and Fisher's Grant Indian Reserve No.24. ECCC notes that the Eastern Whip-poor will, a provincially and federally listed species, should be considered in any Nightjar surveys in Nova Scotia. While the EIS did not identify Eastern Whip-poor-wills in the Site Study Area, it is not clear that this species was targeted during the Nightjar surveys. Section 2.3 of the Birds and Birds Habitat Baseline Review Report (Appendix CC of the EIS) states that line transects were spaced throughout the Project Area so that all habitats were represented. However, section 2.1 of the Wildlife and Wildlife Habitat Baseline Review (Appendix AA of the EIS) states that approximately 22.5% of the forest stands were classified as softwood and this habitat type was not represented in the	Provide specific mitigation measures for avian species at risk found, or likely to be found, in the Site Study Area, including the Common Nighthawk, Eastern Whip-poor-will, and Barn Swallow and update the effects assessments as appropriate. Mitigation measures must: • be consistent with best available information, including any Recovery Strategy, Action Plan or Management Plan in a final or proposed version; and • respect the terms and conditions of SARA regarding protection of individuals, residences, and critical habitat of Extirpated, Endangered, or Threatened species. ECCC notes that section 79(2) of SARA, as well as the *Federal Policy on Wetland Conservation* (for any wetlands that may occur on federal lands or that support habitat for avian species at risk) should be considered in preparing mitigation measures. The avoidance hierarchy should be documented, including the following: • plans to maintain/improve wetland functions; • areas where avoidance is not possible, and justification;

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
				line transect surveys. The Department of Lands and Forestry notes that this may result in under-representing species diversity on site. Based on the avian surveys presented in the EIS, there is potential for migratory birds, including species at risk, to be underestimated in the Project Area and any potential effects unmitigated. Section 7.3.14.3 of the EIS states that Barn Swallows (listed under SARA) were observed nesting on the operations building and have the potential to nest on other buildings to be demolished, which would result in direct effects to Barn Swallows due to the permanent loss of their habitat. Although Barn Swallows or their nests were not identified at any of the buildings during the 2018 surveys, specific mitigation measures are required to protect the species during demolition activities, and to adequately assess the potential effects of the Project on species at risk. This information is necessary to assess the effects of the Project on migratory birds and avian species at risk. ECCC also notes that for wetlands (including coastal area wetlands) where direct and indirect effects cannot be avoided, or be entirely minimized, the implementation of conservation allowances would be an important element to consider in satisfying the requirement to minimize effects to wetland-associated species at risk in the Project Area as per section 79 of SARA and the *Federal Policy on Wetland Conservation*. This information is needed to assess the potential impacts of the Project on migratory birds and species at risk.	• amount of wetland area and functions loss; • mitigation measures for minimizing impacts to wetlands; • as a last resort, identification of compensation measures (e.g. conservation allowances) with the goal of no net loss of wetland functions, including those required to support bird species at risk; and lastly, • a plan to monitor mitigation measures.
IAAC-22	ECCC	Part 2, Section 7.3.5 Part 2, Section 7.3.6	Appendix A Human Health and Ecological Risk Assessment	The EIS Guidelines require the proponent to assess the environmental effects of the Project on migratory birds and species at risk, including the deposit of harmful substances in waters that are frequented by migratory birds, losses or changes in migratory bird habitat, considering the critical breeding and migration periods for the birds, potential adverse effects of the Project on species at risk listed under SARA (flora and fauna) and, where appropriate, their critical habitat. Page viii of Appendix A states: “The ERA did not identify substantive risks to ecological receptors, including plant and soil invertebrate communities, mammals, birds and species at risk (SAR). Hence, risk management or remediation measures for the protection of ecological receptors associated with the Upland Areas, Freshwater Wetland and Estuary are not required.” This study focused on the wetland and estuary areas; however, these guidelines have been more broadly applied to the overall project, including the stabilization lagoon. This information is needed to assess the potential impacts of the Project on migratory birds and species at risk.	Conduct an ecological risk assessment (ERA) for the other project components, including the stabilization lagoon, and update the effects assessment as applicable. Alternatively, provide the rationale and validity of applying the conclusions and criteria from the ERA to those areas of the Project not specifically included in the human health and ecological risk assessment.

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
IAAC-23	NSL&F	Part 2, Section 7.1.9 Part 2, Section 7.4	Table 7.3-1 Mitigation Measures and Best Management Practices Table 8.1-1 Mitigation Measures and Best Management Practices	The EIS Guidelines require the identification of potential adverse effects of the Project on species at risk listed under SARA and, where appropriate, its critical habitat. The EIS does not identify critical habitat areas within or near the Project site; however, the following mitigation measure is identified throughout the EIS: "Refuel 20m from any identified critical habitat areas". It is unclear whether the EIS is referring to critical habitat as identified under SARA. If referring to critical habitat as defined under SARA, critical habitat must be identified within the EIS to ensure that the potential adverse effects of the Project can be assessed. This clarification is needed to assess the potential effects of the Project on species at risk.	Clarify whether the term "critical habitat" refers to critical habitat as defined under SARA. If such critical habitat may be affected by the Project, provide an ecological characterization of the critical habitat and update the effects assessment to account for any potential effects to the critical habitat as required.
IAAC-24	DFO	Part 2, Section 7.1.6	Section 7.1.6.1.3	The EIS Guidelines require a description of the marine environment in the estuary and along the strait shorelines immediately outside of the mouth of Boat Harbour, including marine species at risk. The assessment of marine species at risk contains high-level information related to the temporal occupation period of species at risk that is not supported by any references (page 7-127). As well, the EIS refers to potential species presence in categories (high, moderate to high, moderate, low to moderate and rare to null) but lacks information on what each category represents, the difference between each classification and what they are based on (page 7-126). This information is needed to assess the potential effects of the Project on the marine species at risk.	For the potential for occurrence of marine species at risk: • Explain what the ratings of potential occurrences of marine species at risk were based on (e.g. number of sightings per day/month/year). • Describe the occupation period of each species at risk, including a temporal period when they could be present within the Study Area and provide references.
Accidents and Malfunctions					
IAAC-25	IAAC	Part 2, Section 7.6.1	Section 7.4.1.2	The EIS Guidelines require an analysis of the risks of accidents and malfunctions, a determination of their effects, and the preliminary emergency response measures. Section 7.4.1.2 of the EIS contains a list of credible scenarios and an assessment of effects. However, one credible scenario, the "release of off-specification effluent from temporary water treatment facility" was identified as a credible scenario but not assessed. The EIS needs to provide an analysis of this scenario to complete the analysis of accident and malfunctions.	Provide an analysis of the risk and potential effects of a release of off-specification effluent from the water treatment facility and provide preliminary emergency response measures to mitigate effects.
IAAC-26	IAAC	Part 2, Section 7.6.1	Section 7.4.1.3.2.1	The EIS Guidelines require the proponent to conduct an analysis of the risks of accidents and malfunctions, determine their effects, and present preliminary emergency response measures. The assessment must include an identification of the	Explain why the fine sediment is not anticipated to settle before being flushed by non-impacted upstream areas, and

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
				magnitude, including the quantity, mechanism, rate, form and characteristics of the contaminants and other materials likely to be released into the environment. Section 7.4.1.3.2.1 states that potential impacts from erosion/sedimentation control measure failure would be short term because areas impacted by an increase in fine sediment would be flushed clean by the non-impacted upstream areas. Section 7.4.1.3.2.1 also states "Due to response and mitigation measures to an erosion or sedimentation event and the watercourse's and aquatic species natural ability to survive such events, it is not anticipated that an erosion and sediment control failure will permanently alter the habitat of the receiving environments or affect long-term survival of aquatic species." However, no explanation or rationale is provided to support either of these statements. This information is required for the Agency to complete the analysis of accident and malfunctions.	whether the downstream areas would be impacted by an erosion/sedimentation control measure failure. Provide rationale to support the conclusion that the watercourse and aquatic species have a natural ability to survive an erosion or sedimentation event.
IAAC-27	IAAC	Part 2, Section 7.6.1	Section 7.4.1.3.8.1 Section 7.4.1.3.8.2	The EIS guidelines require the proponent to conduct an analysis of the risks of accidents and malfunctions, determine their effects, and present preliminary emergency response measures. The worst-case scenario identified for an off-site trucking accident was the release of a full tanker load (up to 14,000 L) into the environment. Section 7.4.1.3.8.1 states "With a single release event into environment, such as the scenarios described, environmental effects on water quality would be short-term, as contaminants are flushed downstream and become diluted". Furthermore, Section 7.4.1.3.8.2 states "It is anticipated that in the highly unlikely event of a large diesel spill into a watercourse, resident fish populations would re-establish within the affected area within 1 to 2 years." This information is required to assess the potential effects on the marine environment and fish and fish habitat, including the commercial fishing industry.	Clarify whether these determinations are based on the worst-case scenario (a large diesel spill of up to 14,000 L), and if so, provide more information to show that the release of a large quantity of diesel fuel into or near surface water would only result in short-term effects to water quality. Explain how it was determined that resident fish populations would re-establish within the affected area within 1 to 2 years after a large diesel spill into a watercourse.
Wetlands					
IAAC-28	ECCC	Part 2, Section 7.1.5	Section 7.1.5.2 Appendix A 7.2.2.4, Table I-1.3 and Table C-1.4A	The EIS Guidelines require information about surface water quality, including lab analytical results for metals, major ions, and other contaminants of concern. The EIS does not provide dioxin/furan analysis for freshwater wetland surface waters. This information is required to assess the potential effects of the Project on surface water.	Provide analytical results for dioxins/furans in freshwater wetland surface waters or provide rationale why this information is not required.

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
IAAC-29	IAAC	Part 2, Section 1.3 Part 2, Section 7.3.8	Section 7.1.5.2 Section 7.3.9	The EIS Guidelines require the location of federal lands in relation to the Project. It is unclear from the EIS whether any wetlands to be remediated occur on federal lands. This information is needed to ensure the *Federal Policy on Wetland Conservation* mitigation hierarchy is followed, where required.	Clarify whether any project components to be remediated, including wetlands, are located on federal lands. Update the mitigation measures and effects assessment, as required, in consideration of the *Federal Policy on Wetland Conservation*.
IAAC-30	DFO	Part 2, Section 7.2.2 Part 2, Section 7.3.1	Table 7.3-193 Table 7.3-200	The EIS Guidelines require the identification of potential adverse effects to fish and fish habitat from the modification of hydrological conditions and a description of changes in hydrological functions in wetlands. One mitigation measure suggested in Tables 7.3-193 and 7.3-200 of the EIS is the identification of natural channels running through the estuary prior to remediation to protect the integrity of hydrology in the wetland. Further information was not provided to confirm how the identification of natural channels would protect the hydrology of wetlands supporting fish and fish habitat. It is also unclear what specific actions (e.g., avoidance or reinstatement) will be undertaken to protect wetland hydrology. There is also no discussion in the EIS on the reinstatement of the wetland channel to maintain hydrology between Wetland 16 and the ASB that was noted in the Coastal Hydraulic Modeling Report in Appendix Z of the EIS. A change in wetland hydrology could have adverse effects on fish and fish habitat due to drawdown, elevated temperatures, disruption of habitat connectivity, concerns with adequate flows and fish passage. This information is needed to assess the potential impacts of the Project on fish and fish habitat.	Identify the specific mitigation measures that will be taken to protect the hydrology of wetlands supporting fish and fish habitat and update the effects assessment if required. Describe when the reinstatement of the wetland channel between Wetland 16 and the ASB would occur and how this would mitigate impacts to fish and fish habitat.
Effects of the Environment on the Project					
IAAC-31	IAAC DFO NSE	Part 2, Section 7.6.2	Section 7.4.2.1.1 Table 7.1-10 Table 7.4-17	The EIS Guidelines require details of planning, design and construction strategies intended to minimize the potential environmental effects of the environment on the Project. Section 7.4.2.1.1 of the EIS states: “The Project will be designed to withstand more extreme precipitation events, including the effects of these events such as flooding and erosion.” Table 7.1-10 of the EIS states that the stormwater management system is designed based on the current 1:100 year storm intensity-duration-frequency. The stormwater runoff ditches are sized to accommodate a 1:25 year stormwater event, while the stormwater management pond is sized to accommodate a 1:100 year stormwater event. The EIS acknowledges that it is now more common for Nova Scotia to experience record breaking storms. In a 1:100-year storm, the 1:25-year stormwater ditches would be overcapacity. Undersized stormwater ditches create opportunities for runoff to	Provide the rationale to design the stormwater pond for a 1:100-year event while the stormwater ditches are only designed for a 1:25-year event or redesign the capacity of the stormwater ditches. Update the system design to consider the potential for increasing flood risk due to future climate change. Alternatively, provide rationale for relying on current 1:100-year storm event, and intensity-duration-frequency curves in the system design. Clarify whether and how increasing precipitation and risk of extreme events was considered in the design of the containment cell stormwater runoff system.

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
				bypass overland where unintended receptors may be affected. Further, it is unclear why the 1:25 year risk has been considered in the design of infrastructure intended to be in place for 75 or more years. Given the potential for increasing flood risk due to climate change in the future and the long term nature of the containment cell, it is unclear why only current risk is considered in the design. This information is needed to assess the potential effects of the environment on the Project.	