Fisheries and Oceans Canada | Pêches et Océans Canada

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Your file *Votre référence*

December 21, 2020

Our file *Notre référence*

18-HMAR-00523

Lachlan MacLean
Project Manager, Boat Harbour Remediation Project
Canadian Environmental Assessment Agency
Suite 201 - 1801 Hollis St.
Halifax, NS
B3J 3N4

Subject: Boat Harbour Remediation Project – Technical Review of Environmental Impact Statement

Dear Mr. MacLean:

The Fish and Fish Habitat Protection Program (the Program) of Fisheries and Oceans Canada (DFO) has completed a technical review of the Environmental Impact Statement (EIS) for the Boat Harbour Remediation Project (dated November 17, 2020) received on November 18, 2020. Please note that our review only focused on sections related to DFO's mandate. Given the limited timeline for DFO to complete our review, and the complexities and challenges of navigating an EIS that is not presented in a succinct manner as the reader must refer to multiple EIS sections as well as multiple Appendices, which are often not referred to in the EIS, to get a complete overview of the project assessment. Furthermore, DFO may have additional comments in the future related to the Boat Harbour Remediation Project (the Project) as there are important baseline data gaps for the Estuary as well as the Marine Environment labelled Pictou Road which must be filled prior an adequate effects assessment being conducted.

Based on the Program's review of the EIS, DFO has serious concerns about the potential effects on fish and fish habitat from the Project. In order for DFO to provide detailed advice to the Impact Assessment Agency of Canada (the Agency) on the potential for adverse effects to fish and fish habitat, additional information is required.

As requested in your email of November 18, 2020, Annexes 1, 2, and 3 have been completed (Attachment 1).

The Program's main concerns with the EIS are summarized below.

Missing Baseline Information – Estuarine and Marine Environment

The proponent has not provided sufficient baseline information related to the marine and estuarine environment within the Project Study Areas. Baseline habitat information is missing for both the Estuary and the Marine Environment immediately outside of the mouth of Boat Harbour. Details related to benthic habitat (spatial extent and type of vegetation and substrate), marine species present (fish, mammals, benthic invertebrates), and water quality (salinity profiles, dissolved oxygen profiles, temperature profiles, etc.) have not been provided. Without this information, DFO cannot provide detailed advice to the Agency related to adverse effects for the Surface Water, Marine Environment, and Fish and Aquatic Habitat Valued Components of the EIS.

Coastal Hydraulic Modeling Report (WSP 2020) and Potential for Adverse Effects to Fish and Fish Habitat the Project Study Areas

The results of the coastal hydraulic modeling report (WSP 2020) indicate a very large amount of sediment leaving Boat Harbour once tidal connectivity has been restored, yet this information has not been incorporated into the proponent's effects assessment in the EIS. Approximately 270,000 m^3 of sediment is expected to leave Boat Harbour and enter the marine environment. Furthermore, 140,000 m^3 of the sediment is predicted to leave the model's domain with an unknown destination and fate. Given the potential for effects to fish and fish habitat as a result of the very large quantity of suspended sediment released into the water column and associated sediment deposition, the proponent is requested to expand the model's domain to gain a better understanding of the final destination and fate of the sediment and to use this information, along with the additional baseline information outlined above, to predict and assess potential impacts to fish and fish habitat.

The additional baseline information and modelling outlined above, and a revised effects assessment with this information, is required for DFO to provide advice to the Agency on potential adverse effects from the Project on fish and fish habitat and aquatic species at risk. This information is also required for DFO to complete a regulatory review under the Fish and Fish Habitat Protection Provisions of the *Fisheries Act* and under the *Species at Risk Act*.

If you have any questions with the content of this letter, please contact Sean Wilson at our Dartmouth office at (902) 499-6397 or by email at sean.wilson@dfo-mpo.gc.ca.

Yours sincerely,

Chris Burbidge
Senior Regulatory Reviews Biologist
Regulatory Reviews-Ecosystems Management, DFO Maritimes

Attachment (1):

- Annexes 1, 2, and 3 – Technical Review of the Environmental Impact Statement for the Boat Harbour Remediation Project (November 2020)

ANNEX 1: Advice to the Agency

Table 1: Please use the table below to provide advice for the Agency's consideration in its recommendation to the Minister of Environment and Climate Change and preparation of draft conditions

Questions	Responses/Comments
• Has the proponent described all project components and activities in sufficient detail to understand all relevant project-environment interactions? If not, identify what additional information is needed.	No. A preliminary outline for the reclamation plan was not provided. Furthermore sediment transport from dredging in the estuary was not discussed in sufficient detail.
• Were the study areas sufficient to predict potential effects from all relevant project-environment interactions, and to consider the effects within a local and regional context? • Is the baseline information sufficient to characterize the existing environment, predict potential effects and obtain monitoring objectives? If not, identify what additional information is needed.	No, marine habitat information is missing for the Estuary, as well as the Marine Environment immediately adjacent to the mouth of Boat Harbour.
Alternatives Assessment	
• Has the proponent adequately described the criteria it used to determine the technically and economically feasible alternative means? • Has the proponent listed the potential effects to valued components (VCs) within your mandate that could be affected by the technically and economically feasible alternative means? • Has the proponent adequately described why it chose each preferred alternative means? • Are there other alternative means that could have been presented? If so, please describe.	The proponent is asked to explore the idea of widening the mouth of Boat Harbour prior to the removal of the dam and whether this would reduce potential impacts for sediment export to the Marine Environment once tidal connectivity is restored.
Environmental Effects Assessment	
• Has the proponent clearly described all relevant pathways of effects to be taken into account under section 5 of CEAA 2012? • Has the proponent identified all potential effects to VCs, including species at risk, within your mandate? • Were all potential receptors considered?	Additional information is required related to the potential for impacts to marine environment and fish and fish habitat from the export of sediments from Boat Harbour once tidal connectivity is restored. The proponent has not considered this pathway.

Questions	Responses/Comments
• Were the methodologies used by the proponent appropriate to collect baseline data and predict effects, why or why not? • Has the proponent explicitly addressed the degree of scientific uncertainty related to the data and methods used within the assessment? If there are unaccounted for scientific uncertainties, describe them and indicate the options for increasing certainty in the predictions?	The majority of the methodologies were sufficient to collect baseline data. However, the data is not presented in a succinct manner as the reader must refer to multiple EIS sections as well as multiple Appendices, which are often not referred to in the EIS, to get a complete overview of the baseline conditions. Furthermore, there are important baseline data gaps for the Estuary as well as the marine environment labelled Pictou Road which must be filled prior an adequate effects assessment being conducted.
• Are the predicted effects described in objective and reasonable terms (e.g. beneficial or adverse, temporary or permanent, reversible or irreversible)?	Yes.
• Has the proponent adequately assessed the potential cumulative environmental effects, including using appropriate temporal and spatial boundaries , examining physical activities that have been and will be carried out, and proposing mitigation and follow-up program requirements? Provide rationale.	No Comment.
• Has the proponent adequately described the potential for environmental effects caused by accidents and malfunctions, including the types of accidents and malfunctions, their likelihood and severity and the associated potential environmental effects? If not, identify what additional information is needed.	No Comment.
• Are you satisfied with the proponent's assessment of effects of the environment on the Project? • Has the proponent characterized the likelihood and severity appropriately? Provide rationale.	No Comment.

Questions	Responses/Comments
• Has the proponent sufficiently described and characterized the project activities and components as they relate to federal decisions within your mandate? If not, identify what additional information is needed. • Are changes to the environment, as they relate to federal decisions within your mandate, sufficiently described? If not, identify what additional information is needed.	Additional information is required related to the potential for impacts to the estuary and marine environment and fish and fish habitat from the export of sediments from Boat Harbour once tidal connectivity is restored. Additional baseline information from the estuary and marine environment is required before the Marine Environment and Fish and Fish Habitat VCs conclusions can be fully reviewed. More information regarding the impacts from dredging as well as a fish salvage and euthanization methodology are also required.
Mitigation	
• Has the degree of uncertainty regarding the effectiveness of the proposed mitigation measures been described? If not, identify what information is needed. • Is it clear how each proposed mitigation measure links to each potential pathway of effect?	No Comment
• Would you propose different or additional mitigation measures? If so, provide a description of the mitigation measure(s), with rationale.	Additional research needs to be conducted on the topic of how the proponent can potentially limit the amount of sediment that will leave Boat Harbour and flush into the marine environment once Boat Harbour is reintroduced to tidal influences.
• Which of the proposed mitigation measures and/or project design elements do you consider to be necessary to reduce the likelihood of significant adverse environmental effects? Provide rationale.	See above.

Questions	Responses/Comments
Residual Adverse Environmental Effects	
• Are the identification and documentation of residual environmental effects described by the proponent adequate? If not, what are the aspects for which there is uncertainty and, where possible, indicate how these residual effects can be best described. If there is uncertainty, what are the options for increasing certainty?	No. Additional information is required related to the potential for impacts to the estuary and marine environment and fish and fish habitat from the export of sediments from Boat Harbour once tidal connectivity is restored. More information is required related to the spatial extent of these impacts as well as clarifications regarding sediment depositional thicknesses. Furthermore, baseline data is absent for areas which have the potential to receive the greatest impacts from sedimentation. As a result, there are conclusions which cannot yet be reached regarding impacts to the marine environment and fish and fish habitat.
• Did the proponent provide a sufficiently precise, ideally quantitative, description of the residual environmental effects related to your mandate? Identify any areas that are insufficient.	No. See above.
Determination of Significance	
• Are the conclusions on significance in the EIS supported by the analysis that is provided? • Are the proponent's proposed criteria for assessing significance appropriate? This includes how the criteria were characterized, ranked, and weighted. Provide rationale. Where the proponent has **not** used one of the Agency's recommended key criteria (magnitude, geographic extent, duration, frequency, reversibility, and social/ecological context), has a rationale been provided?	No. Given the fact that baseline/existing condition information is missing for portions of the estuary and marine environment, it would be difficult to reach any significance determination with an acceptable degree of certainty due to the fact that the proponent cannot indicate the state

Questions	Responses/Comments
	of the habitat which could be impacted. Furthermore, with respect to the Surface Water VC, when the reader considers the WSP(2020) hydraulic modeling with the definition of significance in the VC, a Significant residual effect determination can realistically be concluded. However, this is not the conclusion reached by the proponent.
• Were appropriate methodologies used in developing the conclusions on significance?	No. It is not clear what methodologies were used to develop conclusions.
• Do you agree with the proponent's analysis and conclusions on significance? Provide rationale.	No. More information is needed. See above.
Monitoring and Follow-up	
• Does the proposed monitoring and follow-up program verify the predictions of the environmental assessment as they relate to section 5? Please explain additional monitoring or follow-up needed to address uncertainty in the effects assessment.	No, the follow up program has not yet been outlined and is described at a very high level within the EIS. A follow up monitoring program after decommissioning will be needed to confirm the habitat predictions that impacts to marine macrophytes are temporary and reversible as this is a direct indicator of the return to a tidal estuary. Provide a description of the follow up program. Provide a follow up program to confirm that Boat Harbour has returned to

Questions	Responses/Comments
	natural conditions, including the return of anadromous fish species.
• Does the proposed monitoring and follow-up program verify the effectiveness of proposed mitigations as they relate to section 5? Please explain additional monitoring or follow-up needed to address uncertainty in the proposed mitigation.	No, see above.
• Is the objective of the follow-up program clear and measurable? • Does the follow-up program include sufficient detail, and technical merit, for the Agency to achieve the stated objective through a condition (e.g. sufficient baseline dataset, monitoring plans, acceptable thresholds of change, contingency procedures)?	No, See above.
• Are you aware of any federal or provincial authorizations or regulations that will achieve the same follow-up program objective(s)? If so, how do these achieve the objective(s)?	DFO conducts compliance monitoring for all conditions of Fisheries Act authorizations that relate to our Mandate. Where the follow-up monitoring plan has not been fully developed and DFO has not fully explored our regulatory decision, DFO is unable to comment on any conditions that may achieve the same objective.
Additional comments, views, advice	
• Provide any other comments.	

ANNEX 2: Information requirements directed to the proponent

Table 2: Please use the table below to provide your department's comments and suggestions for information that should be required from the proponent to ensure the information in the EIS is scientifically and technically accurate and is sufficient to make a determination of significance on environmental effects.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
DFO-1	5(1)(a)(i) Fish and Fish Habitat	Part 2, Section 3.2.3	Section 3.1 Designated Project	Part 2, Section 3.2.3 of EIS Guidelines Requires "The preliminary outline of a decommissioning and reclamation plan for any components associated with the project. The outline of a reclamation plan has not been specifically provided. Riparian vegetation can be beneficial to fish. Table 7.3-131 of the EIS notes that a reclamation program will be undertaken to re-establish native riparian vegetation communities (terrestrial habitat), but does not appear to be included.	Provide a preliminary outline for the reclamation plan
DFO-2	5(1)(a)(i) Fish and Fish Habitat	Part 2, Section 7.1.5 Groundwater and Surface Water (Project Setting and Baseline Conditions)	Section 7.1.4.2.2 (page 7-86) – Water Quality	Section 7.1.5 of the EIS Guidelines requires a description of "seasonal surface water quality, including analytical results (e.g. water temperature, turbidity, pH, dissolved oxygen profiles) and interpretation for representative tributaries and water bodies	This information request can be adequately addressed through the provision of supplementary information and/or rationale as to why the proponent did not collect seasonal

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				including all sites to receive effluents or runoff". Section 7.1.4.2.2 provides limited seasonal data for surface water quality baseline data for the Study Area.	representative surface water quality data.
DFO-3	5(1)(a)(i) Fish and Fish Habitat	Part 2, Section 7.1.5 Groundwater and Surface Water (Project Setting and Baseline Conditions)	Section 7.1.4.1 (page 7-93) - Surface and Groundwater Interactions	Section 7.1.5 of the EIS Guidelines requires a description of hydrogeology, including " a delineation and characterization of groundwater – surface water interactions including temperature and the locations of groundwater discharge to surface water and surface water recharge to groundwater; Temperature changes in surface water as a result of groundwater- surface water interactions." Section 7.1.4.1 provides a very high level description of surface and groundwater interactions. The proponent states that there is limited interaction between surface and groundwater, but also indicates that groundwater does enter some portions of some watercourses. The proponent does not specify which watercourses or the	This information request can be adequately addressed through the provision of supplementary information and/or rationale as to why the proponent did not collect and delineate surface water – groundwater interactions.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				location of surface water and groundwater interactions. The proponent does not provide a delineation of groundwater – surface water interactions as required by the Guidelines. The information provided by the proponent does not offer any value that can be carried forward into the Valued Component effects assessment. This information would be important to describe the baseline habitat found within watercourses in the Study Area and to determine any potential Project related impacts to fish and fish habitat.	

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
DFO-4	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.1.6 Marine Environment (Project Setting and Baseline Conditions)	Section 7.1.6.1.1 Estuary and Pictou Road Shoreline (Northumberland Strait)	Section 7.1.6 of the Guidelines requires a description of the marine environment "In the estuary and along the strait shoreline immediately outside the mouth of Boat Harbour: -marine water quality; -bottom sediments, including quality, thickness, grain size and mobility; -available bathymetric information for the site; -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." The description of the estuary and coastline along Pictou Road is very high level and it appears that a land based/wetland survey was conducted to describe the biological conditions therein. It does not appear that the proponent has conducted a benthic habitat characterization of the estuary to properly characterize the	This information request can be adequately addressed through the provision of supplementary information in the form of a benthic habitat characterization for both the estuary and along the strait shoreline immediately outside the mouth of Boat Harbour. The benthic habitat characterization should characterize the marine habitat using the same methodology which was used for the marine pipeline bathymetry and endobenthic characterization.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				marine environment within the habitat components. For reference the proponent has appeared to focus their efforts on the East River Marine Pipeline Corridor and properly characterized the habitat within that section of the Study Area. However, they have not carried this methodology forward for the Estuary or the shoreline immediately outside the mouth of Boat Harbour. The information provided by the proponent offers limited value that can be carried forward into the Valued Component effects assessment and thus reduces any value of such an assessment.	
DFO-5	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.1.6 Marine Environment (Project Setting and Baseline Conditions)	Section 7.1.6.1.1 Estuary and Pictou Road Shoreline (Northumberland Strait) – Page 7-117 Surface Water	Section 7.1.6 of the Guidelines requires a description of the marine environment "In the estuary and along the strait shoreline immediately outside the mouth of Boat Harbour: -marine water quality." The description of water quality in the estuary and shoreline along Pictou Road focuses on contaminants and does not depict the baseline biological	This information request can be adequately addressed through the provision of supplementary water quality information.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				conditions therein. The proponent does not provide water temperature profiles, turbidity profiles, pH, dissolved oxygen profiles, and salinity profiles of each respected area. These metrics are key to determining the biological value of each respected Study Area.	
DFO-6	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.1.6 Marine Environment (Project Setting and Baseline Conditions)	Section 7.1.6.1.1 Estuary and Pictou Road Shoreline (Northumberland Strait) – Page 7-119 Vegetation	Section 7.1.6 of the Guidelines requires a description of the marine environment "In the estuary and along the strait shoreline immediately outside the mouth of Boat Harbour: - marine plants, including all benthic and detached algae, marine flowering plants, brown algae, red algae, green algae, and phytoplankton." The description of plants within the estuary only makes reference to those which are not fully submerged. It does not appear that a benthic habitat survey of the estuary was completed to outline the baseline conditions within. Without this information, the Valued Component cannot be fully assessed and offers limited value.	This information request can be adequately addressed through the provision of supplementary information in the form of a benthic habitat characterization of the estuary. Note that the spatial extent of certain species of aquatic vegetation (e.g., eelgrass) are at their annual minimum during winter and their annual maximum during the summer growing season.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
DFO-7	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.1.6 Marine Environment (Project Setting and Baseline Conditions)	Section 7.1.6.1.1 Estuary and Pictou Road Shoreline (Northumberland Strait) – Page 7-120 Fish	Section 7.1.6 of the Guidelines requires a description of the marine environment "In the estuary and along the strait shoreline immediately outside the mouth of Boat Harbour: -marine fauna, including benthic organisms, fish, marine mammals and sea turtles and their associated habitat." This section mentions a fish survey but does not describe the methodology and also does not direct the reader to an appendix where they may find the methodology. Table 7.1-31 lists fish species caught within the estuary. Below 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.	This information request can be adequately addressed through the provision of supplementary information regarding survey methodology. Furthermore, the proponent is asked to clarify if Striped Bass were caught or observed within the estuary and provide rationale for the discrepancy of fish species in table 7.1-31 and Section 7.1.6.2. The proponent is also requested to incorporate traditional and local knowledge baseline information into the marine environment and fish and fish habitat VCs.
DFO-8	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.1.6 Marine Environment (Project Setting and Baseline Conditions)	Section 7.1.6.1.3 Northumberland Strait – At Risk Marine Species – Page 7-130	Section 7.1.6 of the Guidelines requires a description of the marine environment "In the estuary and along the strait shoreline immediately outside the mouth of Boat Harbour:	This information request can be adequately addressed through the provision of supplementary information.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				-federally and provincially listed marine species at risk." The discussion on marine SAR as well as other section of the EIS makes reference to the potential presence of aquatic species with categories of high, moderate to high, moderate, low to moderate, and rare to null. However the proponent does not explain what each category represents or the differences between each classification or what they are based on. The proponent also indicates that the occupation period of aquatic SAR is the Regional Study Area as being variable, depending on the biology of the species. Furthermore, the proponent offers some high level descriptions of occupancy for some aquatic SAR but does not support any of their statements with references. This level of information related to SAR occupancy related to seasonality does not bring value that can be carried forward into the Valued Component effects assessment and thus reduces	The proponent is required to describe the basis for the potential for presence for aquatic SAR and should describe the differences between each category as well as how they reached their conclusions for each species. This is a global comment for the EIS document. Furthermore, the proponent is also required to expand on their discussion of the occupation period for each SAR species. The proponent should list the temporal period when each aquatic SAR could be present within the Study Area and provide proper references, as described in the Guidelines for each species.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				any value of such an assessment.	
DFO-9	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.1.7 Fish and Fish Habitat (Project Setting and Baseline Conditions)	Section 7.1.6.2 Fish and Aquatic Habitat Desktop Review – Page 7-130	The proponent makes the following statement: "As noted above, the sandy substrate of the Pictou Road section of the Northumberland Strait provides significant foraging habitat for some marine species, with at least eight SAR having been identified in that portion of the Strait." The proponent indicates that sandy substrate is significant foraging habitat for the species found within the Pictou Road area, however they do not support this statement with a reference. Given the importance of this statement for the Valued Component effects assessment, the proponent should provide a reference to support such statements.	The proponent is encouraged to support their statement that sandy substrate provides significant foraging habitat with references as required by the Guidelines.
DFO-10	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.1.7 Fish and Fish Habitat (Project Setting and Baseline Conditions)	Section 7.1.6.2 Fish and Aquatic Habitat Field Program – Page 7-131	The proponent provides a high level overview of the watercourses within the Study Area. The proponent provides temperature, TDS, pH, conductivity, DO in the form of averages and extremes, but	This is a global comment for the entirety of the EIS, as the proponent has opted to provide the majority of their biological data in

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				does not provide all of the data within the text of the EIS, instead opting to provide all of the data in an appendix.	appendices. When deferring biological data to an appendix the proponent is required to make reference to each appendix throughout the main text of the EIS. Failure to do so makes the EIS cumbersome to read, as important information is missing. Providing the majority of the data in the appendix, defers the onus of linking all of the information together on the reader. For someone trained in Environmental Sciences this is possible, however for the general public this task is far too onerous.
DFO-11	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.1.7 Fish and Fish Habitat (Project Setting and Baseline Conditions)	Section 7.1.6.2 Fish and Aquatic Habitat Field Program – Page 7-133	The proponent makes the following statement without the support of references as required by the Guidelines: "The majority of watercourses at the BHETF site lack the appropriate physical habitat features to	This information request can be adequately addressed through the provision of supplementary information in the form of peer-reviewed literature

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				sustain populations of adult Brook Trout." The proponent provides some logic to explain this statement, however without proper reference.	references to support the logic that the physical habitat at the BHETF lacks the appropriate features to support adult Brook Trout populations.
DFO-12	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.1.7 Fish and Fish Habitat (Project Setting and Baseline Conditions)	Section 7.1.6.2 Fish and Aquatic Habitat Field Program – Page 7-133	The proponent provides the following statement: " 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 proponent is cautioned from reaching these conclusions without providing additional details. The proponent does not identify which watercourses have barriers, what the barrier is, and where the barrier is located. Water levels in Nova Scotia can fluctuate seasonally and unless a multi-year, multi-	This information request can be adequately addressed through the provision of supplementary information. The proponent is required to indicate where each physical barrier is located, identify the type of barrier, and indicate how they reached their conclusions regarding the status of each barrier.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				season observations have been made, DFO cautions proponents from using water levels as grounds to constitute a physical barrier. Furthermore, certain species, such as the American Eel, can navigate around many natural or anthropogenic obstructions.	
DFO-13	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.1.7 Fish and Fish Habitat (Project Setting and Baseline Conditions)	Section 7.1.6.2 Fish and Aquatic Habitat Field Program – Page 7-135	Table 7.1-34 refers to the likelihood of fish species occurring at site. It is unclear if the site they are referring to is the Site Study Area, the Local Study Area, or the Regional Study Area.	This information request can be adequately addressed by clarifying the definition of site as used in Table 7.1-34.
DFO-14	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.1.7 Fish and Fish Habitat (Project Setting and Baseline Conditions)	Section 7.1.6.2.1 Fish and Aquatic Productivity Summary (Site Study Area) – Page 7-139	Section 7.1.7 of the EIS Guidelines requires a description of: "a description of primary and secondary productivity in affected water bodies with a characterization of season variability" Within section 7.1.6.2.1 of the EIS, the proponent dismisses assessing the productivity of the small watercourses within the Study Area: "Given these watercourses are very small in width and channel depth, these watercourses will not be discussed further"	This information request can be adequately addressed through the provision of a description of primary and secondary productivity in the "small" streams which were previously dismissed.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				The proponent is cautioned against dismissing the importance of streams simply due to their size. The proponent is encouraged to read Wohl, Ellen. (2017). The significance of small streams. Frontiers of Earth Science. 11. 10.1007/s11707-017-0647-y.	
DFO-15	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.1.7 Fish and Fish Habitat (Project Setting and Baseline Conditions)	Section 7.1.6.2.1 Fish and Aquatic Productivity Summary (Site Study Area) – Page 7-139	The proponent makes the following statement regarding the dominant aquatic vegetation at the site: "In general, the dominant aquatic vegetation at the Site is cattails, irrespective of whether the aquatic system is wetland, estuary or open fresh water". For the Estuary, this statement may not be valid and the proponent has not conducted a benthic habitat assessment of the Estuary as described above. To describe the habitat below the surface water of the Estuary, as required by the Guidelines, the proponent is asked to complete an aquatic benthic habitat study and update the baseline conditions thereafter.	This information request can be adequately addressed through the provision of supplementary information in the form of a benthic habitat characterization of the estuary.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
DFO-16	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.3.1 Fish and Fish Habitat	7.3.7 Surface Water	The Guidelines require the EIS to describe adverse effects on fish and fish habitat. Elevated concentrations of suspended sediment can result in the smothering of fish and fish habitat.	The statement in the section "Possible increase of sediment particles that could affect fish egg settling" needs to be rewritten for accuracy. Adverse effects may be expected to include injury or death of fish from physical removal, contact with dredging equipment, smothering from burial or accumulation of sediment on gills, scales, or eggs and larvae. Turbidity can also affect the success and health of visual feeders.
DFO-17	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.2.2 Changes to Groundwater and Surface Water	7.3.7.4.2 – Dredging and Surface Water Interactions Table 7.3-111 Appendix Z Coastal Model WSP 2020	This section notes no decommissioning or abandonment activities are required for dredging. 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.	Where does reinstatement of the wetland channel for preservation of hydrology between Wetland 16 and the ASB noted in WSP 2020 in Appendix Z fit into the assessment? Under which project phase is work to reshape and revegetate disturbed

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
					wetland edges or bottoms addressed?
DFO-18	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.2.2 Changes to groundwater and surface water (Predicted changes to the physical environment)	Section 7.3.7.4.3 Wetland Management – Project Activities and Surface Water Interactions and Effects and Mitigation Measures	Section 7.2.2 of the Guidelines state that the proponent shall assess changes to turbidity. Section 7.3.7.4.3 of the EIS states that "Direct and Indirect impacts associated with the remediation and decommissioning of the BHETF are thought to be short term. In all model scenarios, the highest TSS concentrations were predicted to occur within Boat Harbour, with concentrations dropping substantially and rapidly with increasing distance from the mouth of Boat Harbour." However, the coastal hydraulic modeling repot (WSP 2020) indicates that increased turbidity (> 25 mg/L) will occur within the estuary and the marine coastal area near the mouth of Boat Harbour for time periods of greater than one year. This temporal period would indicate impacts will occur in the medium – long term duration.	This information request can be adequately addressed by changing the duration of impacts listed in the EIS.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
DFO-19	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.2.2 Changes to groundwater and surface water (Predicted changes to the physical environment)	Section 7.3.7.4.7 Dam – Project Activities and Surface Water Interactions and Effects and Mitigation Measures 7.3.11 Marine Environment 7.3.12 Fish and Aquatic Habitat	Section 7.3.7.4.7 of the EIS states that "in-post remediation conditions, tidal currents will increase, which may cause sediment resuspension in the water column in certain areas. A fraction of Boat Harbour bottom sediments could therefore be eroded and transported by the tidal currents. However, general water quality is predicted to improve in the Project Area when tidal influence is reintroduced to the BHSL. " While there may be a longer term improvement in terms of water quality, TSS levels within Boat Harbour and the coastal marine environment will be negatively impacted for at least a year, if not longer. WSP (2020) conducted hydrodynamic and sediment transport modeling to determine the potential impacts to the Study Area once Boat Harbour is once again restored to tidal influences. 270,000 m^3 of sediment, primarily silt and clays, is mobilized during the re-naturalization process, of which approximately 140,000 m^3 leaves the model domain. TSS concentrations peak near 5,000 mg/L in Boat Harbour and reach	This information request can be adequately addressed through the provision of supplementary information.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				1,500 mg/L in the Northumberland Strait. Concentrations in excess of 1,000 mg/L persist for approximately 3 weeks and continue to peak to 500 mg/L for approximately 9 weeks following dam removal. Equilibrium values are approached after approximately 42 weeks but TSS concentrations continue to gradually decrease up to one year following dam removal. After one year, peak TSS concentrations in Boat Harbour occasionally approach 122 mg/L with an overall range between 16 mg/L and 122 mg/L. At equilibrium, maximum TSS concentrations entering the Northumberland Strait (Gauge 3) occasionally approach 52 mg/L. The proponent is asked to provide a rationale as to why increased TSS due to tidal reintroduction was not assessed within the Surface Water VC, Marine Environment VC, or the Fish and Aquatic Habitat VC. The proponent is also asked to provide rationale as to why the modelling conducted by WSP	

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				was not referred to or mentioned in this section of the EIS.	
DFO-20	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.2.2 Changes to groundwater and surface water (Predicted changes to the physical environment)	Section 7.3.7.6 – Surface Water Significance of Residual Effects	The proponent defines a significant adverse effect for Surface Water as: "The Project Team evaluated a potential TSS increase based on regulation of the Canadian Water Quality Guidelines for the Protection of Aquatic Life (Marine). The TSS released through different activities will respect the maximum increase of 25 mg/L from background levels (CCME, 2002). A significant increase in TSS concentrations can potentially have an impact on marine habitat and fauna, and constitute harmful alteration, disruption or destruction (HADD) of fish habitat under the *Fisheries Act*. A significant adverse residual environmental effect on surface water is defined as one that degrades water quality through long-term (beyond natural variability) project-related (above existing background range) exceedances of the Canadian Water Quality	This information request can be adequately addressed through the provision of supplementary information. The proponent is asked to justify why a significance determination was not concluded when their modeling indicates that a significance determination should be made based on the significance criteria they provided. The proponent is asked to incorporate WSP 2020 into the Surface water VC and to reassess any impacts to surface water.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				Guidelines based on watercourse specific use." The modeling conducted by WSP (2020) indicates medium to long term increases in TSS which show significant increases in TSS levels well above the CCME guideline of 25 mg/l from background. The proponent does not cite their modeling within the Surface Water VC and determines that impacts to surface water are not significant. However, the conclusions indicated in WSP meet the definition of significance defined by the proponent. The proponent is asked to justify why a significance determination was not concluded when their modeling indicates that a significance determination should be made based on the significance criteria they provided.	
DFO-21	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.3.3 Marine Environment (Predicted effects on valued components)	Section 7.3.11.3.3 Wetland Management – Project Activities and Marine Environment Interactions and Effects and	The proponent states: "Although there will be a direct temporary habitat loss of wetland habitat within the estuary, once the contaminated sediment is removed from the wetland/estuary the overall habitat quality of the impacted	The proponent is requested to complete a thorough baseline investigation of the Estuary prior to making predicted statements which require the

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
			Mitigation Measures – Page 7-475	areas will be improved through the re-establishment of tidal wetland conditions and natural colonization by halophytic vegetation." Given the fact that the proponent has not fully assessed the marine habitat within the Estuary (refer to previous IRs), it is not possible to make this determination due to the fact that baseline conditions are unknown.	knowledge of current baseline conditions within the Estuary.
DFO-22	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.3.3 Marine Environment (Predicted effects on valued components)	Section 7.3.11.3.7 – Dam – Project Activities and Marine Environment Interaction and Effects and Mitigation Measures	The proponent states "Studies completed by St. FX University indicate that the underlying sediments (below the impacted sediment that will be removed) can support the growth of eel grass and salt marsh grass species. These species can therefore be expected to colonize within Boat Harbour following remediation, further increasing the quality of habitat available for other marine species such as those noted above." DFO cautions that there is some uncertainty regarding this prediction which is based one study. The proponent is cautioned against making	The proponent is requested to provide further justification in the form of peer-reviewed literature, and supporting rationale to show how one can expect eelgrass to recolonize Boat Harbour. Alternatively the proponent should indicate the uncertainty related to this predictive statement.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				predictive statements such as these without supporting them with solid scientific evidence and rationale. For instance, the fact that the underlying sediments can support eelgrass, does not necessarily mean that the species can be expected to colonize the area as eelgrass require a suite of specific environmental conditions to colonize and thrive.	
DFO-23	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.3.3 Marine Environment (Predicted effects on valued components)	Section 7.3.11.5 Marine Environnent Signifiance of Residual Effects	The proponent has not fully characterized the baseline conditions in both the Estuary and in the nearshore area immediately adjacent to the mouth of Boat Harbour. A benthic habitat study of the estuary was not completed and the LIDAR used to characterize habitat within the coastal area near Pictou Road failed to penetrate the water's surface in the area adjacent to mouth of Boat Harbour. As a result, the current baseline conditions in both of these marine areas are unknown. Furthermore, within the Marine Environment VC, the proponent has not assessed the issue regarding the effects of increased TSS within the	The proponent is requested to complete a full baseline assessment of all the Study Areas potentially impacted by project activities prior to conducting an effects assessment. Once the marine baseline conditions are fully understood (i.e. substrate composition, benthic vegetation, invertebrate, fish species, etc.), the proponent is requested to assess project related impacts including impacts from the

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				estuary, the nearshore marine area of Pictou Road, and within the Northumberland Strait as a result of the reintroduction of tidal flow into and out of Boat Harbour. The modeling conducted by WSP (2020) indicated significant water column increases of TSS as well as sediment deposition with marine areas assessed by the Project. However, the proponent has not incorporated this data in their assessment. As a result, the proponent is asked to explain how they reached their conclusion of non-significant adverse effects without fully understanding the current baseline conditions within the Study Areas and without assessing all the potential impacts from project activities.	increase in sediment load flowing out of Boat Harbour on the marine environment as indicated in the Guidelines. The proponent should discuss the impacts from both water column increases in TSS as well as impacts from the deposition of sediment on benthic habitats. The proponent is requested to use peer-reviewed literature when reaching conclusions.
DFO-24	5(1)(a)(i) Fish and Fish Habitat 5(1)(a)(ii) Aquatic Species 5(2) Fisheries Act Authorizations Concerning Fish and Fish Habitat Protection Regulations	Part 2 Section 7.3.3 Marine Environment	7.3.11.3.3 Dredging Project Activities and Marine Environment Interactions and Effects and Mitigation	Dredging of between 16,871 m^2 and 39,573 m^2 of estuarine habitat, including salt marsh, and the associated death of fish may require authorization under the Fisheries Act for the death of fish and the harmful alteration disruption or destruction of fish habitat.	Describe the effects of dredging on macrophytes that use estuarine habitat. A follow up monitoring program after decommissioning will be needed to confirm

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
			7.3.11.4 Marine Environmental Monitoring	Additional information is needed to complete an effects assessment for the EA and for DFO to make a regulatory decision.	the habitat predictions that impacts to marine macrophytes are temporary and reversible as this is a direct indicator of the return to a tidal estuary. Provide a description of the follow up program.
DFO-25	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.3.1 Fish and Fish Habitat (Predicted effects on valued components)	Section 7.3.12 Fish and Aquatic Habitat	The proponent states that they plan on capturing and euthanizing as many fish as possible from Boat Harbour. The proponent does not indicate how they plan on doing this and from what areas of the site.	The proponent is requested to provide a detailed description of their methodology for the removal of contaminated fish from Boat Harbour.
DFO-26	5(1)(a)(i) Fish and Fish Habitat	Part 2 - Section 7.3.1 Fish and fish habitat	Section 7.3.12	Section 7.3.1 of the EIS Guidelines requires the proponent to discuss: "how project construction timing correlates to key fisheries windows for freshwater and anadromous species, and any potential effects resulting from overlapping periods", which is missing from Section 7.3.12 of the draft EIS. The instream work window dates are not provided the text of the EIS.	Discuss key timing windows for freshwater species found within the Study Area with respect to any potential effects, which may occur due to overlapping periods.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
DFO-27	5(1)(a)(i) Fish and Fish Habitat	Part 2, Section 7.3.1 Fish and Fish Habitat and Section 7.3.2 Wetlands	Table 7.3-189 Mitigation Measures for Effects of Wetland Management on the Marine Environment 7.3-196 Residual Environmental Effects for the Marine Environment	The Guidelines require identification of potential adverse effects on fish or habitat of modification of hydrological conditions, and a description of change in hydrological functions in wetlands. Mitigation suggested is identification of wetland channels to preserve hydrology. It cannot be confirmed how this mitigation will protect the hydrology of the wetland supporting fish and fish habitat. A lack of connection between surface water resources could affect fish habitat connectivity and adequacy of flows.	Through what specific actions will the hydrology be protected? Will wetland channels be avoided or reinstated following dredging and wetland management activities? A commitment to avoid or reinstate channels is mitigation that would serve to protect wetland hydrology, and depending on specific conditions, may also provide for fish habitat connectivity, adequate flows and fish passage.
DFO-28	5(1)(a)(i) Fish and Fish Habitat 5(1)(a)(ii) Aquatic Species	Part 2 Section 7.6 Other Effects to Consider	7.4.1.3.8.2 Off-Site Trucking Accident – Fish and Aquatic Habitat	Guidelines require the proponent to consider effects and emergency response associated with malfunctions and accidents. This section of the EIS notes that containment measures will be immediately initiated to limit the spread of the spill and that fuel containment or an	Is there a requirement for truckers leaving the project site to be equipped to initiate immediate spill containment and deploy absorbent and other measures?

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				absorbent boom will be deployed to contain the plume and collect the fuel until other response personnel arrive on site.	
DFO-29	5(1)(a)(i) Fish and Fish Habitat 5(1)(a)(ii) Aquatic Species	Part 2 Section 7.6 Other Effects to Consider – Effects of the Environment on the Project	7.4.2.1.1 Climate Change and Extreme Weather Conditions	This section recognizes that existing infrastructure was not intended to withstand the more frequent and intense storms predicted in the coming years that may be addressed in new construction. "The Project will be designed to withstand more extreme precipitation events, including the effects of these events such as flooding and erosion." Text below Table 7.4-14 acknowledges that it is now more common for the Province to experience record breaking storms. In a 1:100 storm, 1:25 ditches would be over capacity already increasing risks of mobilization of potentially impacted site soils and sediment in runoff. Undersized ditches create opportunities for runoff to "short circuit" overland where unintended receptors may be affected.	Is there a need to revisit design capacity of stormwater ditches for a 1:25 while the stormwater pond is designed for a 1:100?
DFO-30	5(1)(a)(i) Fish and Fish Habitat 5(1)(a)(ii) Aquatic Species	Part 2 Section 7.6.3 Cumulative	7.4.3.4.5.5 Residual Cumulative	It is unknown if anadromous fish populations will have the homing capabilities to utilize this	Provide a follow up program to confirm that Boat Harbour has

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
		Effects Assessment	Effects and Significance Assessment	habitat right away, as the last anadromous fish to use this habitat in its tidal form are from generations long past based on the species noted in the MEKS and public record at the time of the BHETF commissioning. However, an overall increase in diversity is expected in the area. To confirm the EIS prediction of a return of Boat Harbour to a tidal estuary and natural conditions, a follow up program is needed to confirm whether anadromous fish species return.	returned to natural conditions, including the return of anadromous fish species.
DFO-31	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.1.6 Marine Environment (Project Setting and Baseline Conditions)	Appendix BB – Marine Environment Baseline – NSCC 2017 Topo-Bathymetric Lidar Research to support remediation of Boat Harbour	LIDAR was used to classify the marine benthic habitat (sediment and vegetation) within the Pictou Road Marine environment. However, the LIDAR did not penetrate the area in the immediate vicinity of the mouth of Boat Harbour. This area has the potential to be substantially impacted by elevated TSS levels once tidal connectivity is restored to Boat Harbour, Habitat data from this area is required in the EIS Guidelines. This baseline data is necessary to adequately conduct an effects assessment	This information request can be adequately addressed through the collection of supplementary baseline information as mentioned above in other IRs.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				for the Marine Environment VC and is currently a major data gap.	
DFO-32	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.1.6 Marine Environment (Project Setting and Baseline Conditions)	Appendix BB – Marine Environment Baseline – NSCC 2017 Topo-Bathymetric Lidar Research to support remediation of Boat Harbour	Ground truth analysis was used to validate the LIDAR data in Appendix BB. However, the majority of the ground truth data points appear to be along the Northern coastline, outside of Pictou Harbour, with few ground truth points immediately outside of Boat Harbour or within the area predicted to be impacted in the sediment transport modeling conducted by WSP (2020).	The proponent is asked to provide justification as to why the ground truth data points were not evenly distributed throughout the study area, provide evidence that the unevenness of ground truth points did not bias the LIDAR data outputs, and to explain how the sediment and vegetation mapping was created given some ground truth classifications were not accurate (i.e. mud with only 25% agreement).
DFO-33	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.1.7 Fish and Fish Habitat (Project Setting and Baseline Conditions)	Appendix BB – Fish and Fish Habitat Review – Pictou Road	The proponent gives a brief, high level overview of the benthic habitat within the Pictou Road area adjacent to Boat Harbour, however it offers little value, with no habitat mapping and is based on a dated reference (JWEL 2005). As in previous IRs, the proponent is	This information request can be adequately addressed through the collection of supplementary baseline information as mentioned above in other IRs.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				requested to update this baseline information.	
DFO-34	5(1)(a)(i) Fish and Fish Habitat 5(1)(a)(ii) Aquatic Species	Part 2 Section7.1.6 Marine Environment, Section 7.3.3 Marine Environment, and Section 7.3.4 Marine Plants	Section 7.1.6.1 Appendix BB NSCC 2017	The presence of eelgrass or macrophytes is identified early in the section but no further detail is provided to approximate location or extent. It is challenging to distinguish these features based on the Lidar images provided in the draft EIS. Eelgrass provides important nursey habitat for many species and may be a key habitat component to support recovery of Boat Harbour to more natural conditions in the Project area following remediation. More detailed information for macrophytes or eelgrass beds available in appended studies would support review of potential effects on use of marine environment habitat.	Include information from the 2017 NSCC report and maps (3-19 to 3-21) that clearly show bottom type classification with distributions of eelgrass and other bottom types in good agreement with ground truthing. This information is directly relevant and needs to be included in the body of the EIS.
DFO-35	5(1)(a)(i) Fish and Fish Habitat 5(1)(a)(ii) Aquatic Species	Part 2 Section 7.1.6 Marine Environment and Section 7.3.3 Marine Environment	Section 7.1.6.1 Appendix AA NSCC 2017	The NSCC 2017 report provides information on currents that warrants consideration in the discussion of shoreline stability and sediment mobility. Further, the NSCC report makes the following statement with respect to geomorphology and bottom types in the Executive	Is the mapping noted in the recommendation available or the data suitable to develop or further refine this information to be more directly reflective of Boat

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				Summary: "These data will help to determine if Pictou Harbour changes when Boat Harbour is converted back to its natural setting as a tidal inlet. One should consider a mapping program to measure the natural variability of the physical and biological system before Boat Harbour is altered, then a systematic mapping program to measure change once it is altered."	Harbour? If so it could provide valuable baseline information to inform follow up and monitoring programs.
DFO-36	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.3.3 Marine Environment (Predicted effects on valued components)	Appendix Z – Boat Harbour Remediation Project – Coastal Hydraulic Modeling (WSP 2020)	The Coastal Hydraulic Modeling Report conducted by WSP indicates that an abundance of sediment will leave Boat Harbour and enter the marine environment adjacent to the mouth of Boat Harbour. The report indicates that after tidal flows have been reestablished, the mouth of boat Harbour will erode and expand to approximately 34 m. Some of the sediments leaving the harbour will be as a result of the eroding channel mouth. It would appear that there is the potential to reduce some of the sediment leaving the Study Area and entering the marine environment if the mouth of boat harbour was widened by	The proponent is asked to clarify if the option of widening the mouth prior to the opening of the dam was explored and if so, did it reduce sediment export into the marine environment?

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				anthropogenic mean prior to the opening of the dam.	
DFO-37	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.3.3 Marine Environment (Predicted effects on valued components)	Appendix Z – Boat Harbour Remediation Project – Coastal Hydraulic Modeling (WSP 2020)	The Coastal Hydraulic Modeling Report conducted by WSP indicates that approximately 140,000 m^3 of sediment leaves the modeled domain with an unknown end point.	Given the potential impacts to the marine environment, fish and fish habitat, as well as the fact that there is an abundance of eelgrass in close proximity to the Project, the proponent is asked to justify why the model domain was not expanded to any potential impacts to nearby marine habitat?
DFO-38	5(1)(a)(i) Fish and Fish Habitat	Part 2 Section 7.3.3 Marine Environment (Predicted effects on valued components)	Appendix Z – Boat Harbour Remediation Project – Coastal Hydraulic Modeling (WSP 2020)	Figure 5.16 depicts sea bed level change between the post-dredging and near equilibrium bathymetry. The figure generally indicates sediment exiting Boat Harbour and being deposited on the sea floor in the Pictou Road Area. However it is difficult to determine from the legend what the sediment deposition thickness is in the marine environment. Furthermore, it appears that sediment is likely deposited beyond the model domain.	The proponent is requested to provide sediment deposition thickness data which can be easily interpreted. Furthermore, given the importance of habitat outside of the model domain, the proponent is asked to justify why the domain was not expanded to assess the full effects of the Project. The Proponent is asked to

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
					provide an assessment of effects outside the model domain.
DFO-39	5(1)(a)(i) Fish and Fish Habitat 5(1)(a)(ii) Aquatic Species	Part 2 Section 7.3.3 Marine Plants	7.3.7.4.3 Dredging and Surface Water Interactions Appendix Z Coastal Model s5.3.3 WSP 2020 7.3.11.3.7 Dam – Project Activities and Marine Environment Interactions and Effects and Mitigation Potential Effects	A description of effects of changes in the use of the marine environment is required by the Guidelines. If eelgrass beds are reduced or lost as a result of elevated TSS, changes in the use of marine environment are likely to occur. Elevated concentrations of suspended sediment and increased turbidity may result in adverse effects in as little as days and biomass reductions in months. TSS is noted to return to background conditions quickly but initially remain elevated at 100s mg/l in Boat Harbour for a period of months up to a year in certain locations as noted in Section 5.3.3 of WSP 2020 Coastal Model. In these conditions, monitoring may be required to confirm compliance with TSS limits, in particular if there may be sensitive receptors in the area influenced by elevated concentrations of suspended sediment or turbidity.	Describe potential effects of prolonged sedimentation considering sensitive receptors such as eelgrass beds. Establish locations to monitor for adverse effects on sensitive receptors in follow up programs. This will help verify the predictions that prolonged periods of turbidity and elevated concentrations of TSS will not result in residual adverse effects.

ID	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
				This refers to localized siltation if control measures fail. It does not speak directly to the results of the coastal hydraulic study that indicate an extended period of elevated TSS concentrations lasting for months when the dam is removed.	

ANNEX 3: Advice to the proponent

Table 3: Additional advice to the proponent, such as guidance or standard advice related to your departmental mandate

ID	Reference to EIS	Context and Rationale	Advice to the Proponent
DFO-1	7.1.6.1.1 Estuary and Pictou Road Shoreline (Northumberland Strait) 7.1.6.1.2 Northumberland Strait / East River Marine Pipeline Corridor	10 striped bass samples were collected from the estuary in 2019 but are not included in Table 7.1-30 with mummichog, white perch and tomcod. Table 7.1-30 title is name List of Fish Species Captured in Boat Harbour and Boat Harbour Wetlands and Watercourses with reference to the capture of 402 fish in a Fall 2019 survey. This table title reappears under 7.1.6.2 Fish and Aquatic Habitat, in Table 7.1-32 which refers to the Fall 2019 survey with a different number captured and different species list. Estuary and Pictou Road Shoreline Field Programs (2018 -2019) - This section seems largely focused on HHERA findings with inadequate focus on fish and fish habitat related aspects.	In the EIS sections, information from various fish studies is referenced and a number of studies are appended. Effort is needed to consolidate information on fish and fish habitat in the EIS into a cohesive overview of conditions. Distinction in the table titles to reflect the differences in the data presented is required for clarity. Fish species in Table 7.1-30 seems to be missing striped bass which were noted to below the table have had 10 samples of striped bass collected. It is unclear from the text whether the 10 samples of striped bass indicates individual fish or collected from the estuary.
DFO-2	Section 7.1.6.2 Fish and Aquatic Habitat Field Program – Page 7-131	The proponent provides a high level overview of the watercourses within the Study Area. The proponent provides temperature, TDS, pH, conductivity, DO in the form of averages and extremes, but does not provide all of the data within the text of the EIS, instead opting to provide all of the data in an appendix.	This is a global comment for the entirety of the EIS, as the proponent has opted to provide the majority of their biological data in appendices. When deferring biological data to an appendix the proponent is required to make reference to each appendix throughout the main text of the EIS. Failure to do so makes the EIS cumbersome to read, as important information is missing. Providing the

			majority of the data in the appendix, defers the onus of linking all of the information together on the reader. For someone trained in Environmental Sciences this is possible, however for the general public this task is far too onerous.
DFO-3	Table 7.3-1 Mitigation Measures and Best Practices Table 8.1-1 Mitigation Measures and Best Practices	The use of vegetation as a runoff control may require supplemental consideration in areas predominately by clay, or at times of the year when soil conditions are saturated and vegetation die off has occurred.	The use of vegetation as a runoff control can be limited by seasonal conditions and saturation, as well as soil types. Where this is proposed as a runoff control, consider adding vegetative complexity in native plantings that will support the function throughout the year. Different types and heights of vegetation will support reduction of soil erosion. Ensure that offtake diches or swales to manage erosion and sedimentation do not negatively impact wetlands and watercourses on site that may support fish and fish habitat.
DFO-4	Table 7.3-1 Mitigation Measures and Best Practices	Culturally sensitive euthanization of potentially contaminated fish prior to remediation is recognized in the EIS text and tables however the injury or death of fish not euthanized is likely to result from project activities such as dredging and wetland management activities.	Table 7.3-112 Direct and Indirect Impacts of Dredging Activities on Surface Water Fish Survival - direct impacts may be expected to include injury or death of fish from physical removal, contact with dredging equipment, smothering from burial or accumulation of sediment on gills, scales, or eggs and larvae.
DFO-5	7.3.11.2 Marine Environment Standards or Thresholds for Determination of Significance	Thresholds of significance appear to be linked to federal legislation. If these standards are meant to reflect effects in comparison to regulatory thresholds under the Fisheries Act and Species at Risk Act language should consistent.	For the purposes of the EIS, an update is required to reflect appropriate regulatory terminology. Harm, harassment or death of a federally listed marine species at risk, is prohibited under the Species at Risk Act.

DFO-6	7.3.11.3.7 Dam – Project Activities and Marine Environment Interactions and Effects and Mitigation Measures 7.3.12.3.2 Dredging – Project Activities and Fish and Fish Habitat Interactions and Effects and Mitigation Measures – Potential Effects	Effects and resources to be affected by the project should be clearly understood in the EIS. Terminology in various places is not clear, hindering the understanding of potential effects. The type of aquatic vegetation is directly relevant to the assessment of effects on fish and fish habitat but is not clear in the document.	Underwater noise and vibration are more suitable terms to apply to effects on aquatic species rather noise pollution. The term marine plants does not adequately specify the resource being affected. Is it emergent largely terrestrial species or underwater macrophytes? Clarity is needed on this here and throughout the document and is of particular relevance in the effects assessment sections. It is unclear given that the effects of aquatic vegetation removal impacts on birds and wildlife is presented but not the impacts on fish. Clarify to what species habitat fragmentation impacts apply. Fish habitat is generally discussed in terms of connectivity or fish passage. The adverse effects of death of fish are dismissed here despite the acknowledgement that the local population in Boat Harbour remediation areas will be euthanized if captured or will likely incur injury or death as a result of dredging activities. A Fisheries Act authorization may be required for the incidental death of fish and euthanization.
DFO-7	7.4.1.3.2.1 Marine and Fish / Aquatic Habitat	This seems to indicate that in the event of an erosion and sediment control failure, areas will “flushed clean” from upstream areas. Large quantities of sediment can smother habitat as well as fish.	The text should reflect that deposition of deleterious substances such as sediment, is prohibited under the Fisheries Act and may require direct intervention by the proponent if such a deposit results or is likely to result in the unauthorized death of fish harmful alteration, disruption or destruction of fish habitat.
DFO-8	7.3.12.1 Fish and Aquatic Habitat Boundaries	References to aspects of the Fisheries Act are confused in the document between	The language of Administrative boundaries need to be revised to reflect the language of

		the former Fisheries Protection and Pollution Prevention Provisions and the current Fish and Fish Habitat Protection and Pollution Prevention Provisions of the Act that came into force August 2019.	the Fisheries Act that came into force in August of 2019 and is reflected in significance thresholds in the section immediately below. The reference to serious harm is not appropriate or applicable and this needs to be updated to be consistent with the Fish and Fish Habitat Protection and Pollution Prevention Provisions of the Fisheries Act. A scan of the document prior to release for review is needed to remove outdated terminology like serious harm repealed in 2019, and compensation which has not been applied in the context of the Fisheries Act since 2013.
DFO-9	7.3.12.2 Fish and Aquatic Habitat Standards or Thresholds of Significance	The threshold for authorization under the Fisheries Act as it related to the nature and duration of effects on fish and fish habitat differs between the former and current versions.	Add the word "work" in front of undertaking and activities to reflect the language of the Fisheries Act. Revise effects definition to reflect regulatory language around measures to offset for the harmful alteration disruption or destruction of fish or the death of fish. This is of significance given the difference in analysis of the duration of effects in that the Fisheries Act recognizes alteration and disruption as well as destruction as prohibited effects on fish and fish habitat unless authorized by the Minister.
DFO-10	Table 7.3-199 Mitigation Measures for the Effects of Waste Management Activities on Fish and Fish Habitat Table 7.3-214 Residual Effects for Fish and Aquatic Habitat	This table does not capture the requirements of Fisheries Act and related processes accurately and presents concerns that the EIS has not been informed by the Fisheries Act that came into force in August 2019.	Please update language related to the *Fisheries Act* to reflect recent updates.
DFO-11	Table 7.3-205, 7.3-208 and elsewhere in mitigation tables	These tables and elsewhere in the EIS suggests the mitigation to avoid draining	The appropriate mitigation to avoid draining fish habitat is to conduct site specific

		fish habitat may include "Establish construction methods, such as working from up gradient to down gradient to reduce the potential to drain or flood a partially altered wetland or down gradient wetland via indirectly altered hydrology due to remediation, site dewatering, or road construction." Wetlands can be drained if elevations are not well understood.	surveys to gather elevations in work areas at the site and ensure that project activities are planned around these elevations to avoid impacts to fish and fish habitat. Implementation of appropriate runoff controls should address potential for flooding.
DFO-12	7.4.1.3.8.2 Off-Site Trucking Accident - Fish and Aquatic Habitat	Some assumptions around an off-site trucking accident may not be accurate. "Even if a spill were to occur, for a significant environmental effect to occur it would need to occur at a location proximal to a watercourse where a sensitive species resides at a sensitive life stage - a combination of events which is not likely to occur." "The environmental effects of a spill to surface water quality (fish habitat quality) would be reversible as the high spring flows and high bed load transport would effectively flush the system during the spring and during any heavy rain/high flow event following a spill."	The notion that sensitive species and life stages being affected by a spill is an unlikely combination of events may not be an accurate assumption. Further, all fish species and life stages are protected under the Fisheries Act. This text suggests that off-site spills of petroleum products or reagents will simply be flushed by the environment. This statement is concerning.
DFO-13	Table 8.1-1 Mitigation Measures and Best Practices	In General BMPS refuelling 30 m from identified critical habitat is proposed.	Given that the term critical habitat has regulatory implications, it should be clearly stated if this is intended to reflect critical habitat under the federal Species at Risk Act or other legislation. If not consider alternative terminology to avoid confusion.

DFO-14	Table 8.1-2 Surface Water – Dredging	The lack of mention of regulatory instruments under the Fisheries Act in mitigation seems to exclude an important aspect that informs the definition of a significant adverse effects in this section and the Fish and Aquatic Habitat section.	Where applicable, note regulatory instruments that may affect assessment of residual effects like measures to offset authorized impacts to fish and fish habitat. The language used in the EIS application to aspects related to the Fisheries Act or Species at Risk Act should be consistent with the language of these Acts.
DFO-15	Section 9 Follow up and Monitoring Programs – Adaptive Management Measures	Adaptive management is a key tool to manage unexpected outcomes of mitigative strategies and measures. Regulatory review of applications for authorization will consider mitigation proposed at the time of application. Changes to mitigation measures could affect regulatory decisions.	Adaptive Management Measures planned for implementation should be discussed with relevant regulators in advance to ensure that changes are consistent conditions of related regulatory instruments such as Fisheries Act authorizations.
DFO-16	Section 9.1.1 Complaint Response Protocol needs to be updated to include notification of relevant regulators	If upset conditions occur on site that result in complaints, it is likely that DFO will be contacted. Advance notice from the proponent will provide context and enables collaborative identification of mitigative approaches as needed.	The Complaint Response Protocol needs to be updated to include notification of relevant regulators.