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July 27, 2022

Sent by E-mail

Ken Swain
Project Leader
Nova Scotia Lands Inc.
Halifax, NS Canada
Email: <email address removed>

Dear Ken,

SUBJECT: Outcome of the Technical Review of the response to the Round 1 Information Requirements (IAAC-01 to IAAC-81) of the Boat Harbour Remediation Project Environmental Impact Statement

The Impact Assessment Agency of Canada (IAAC) is completing its review of Nova Scotia Lands' responses to 81 of the 82 Round 1 Information Requirements (IRs) issued by IAAC for the Boat Harbour Remediation Project (the Project) and determined that additional information is required to proceed with the environmental assessment (EA).

As previously discussed, to support the ongoing EA review while Nova Scotia Lands finishes the Round 1 IR responses, Health Canada, Environment and Climate Change Canada, and provincial subject matter experts completed their technical reviews of the submitted Round 1 IR responses. Based on these reviews, IAAC prepared additional IRs (Round 2, Part 1 – attached) and provided them in draft form to Nova Scotia Lands and Pictou Landing First Nation on April 9, 2022. Once all Round 1 IRs have been completed and submitted, they will be made public on the Canadian Impact Assessment Registry Internet site: <https://iaac-aeic.gc.ca/050/evaluations/proj/80164>. At that time, Fisheries and Oceans Canada and Pictou Landing First Nation will complete their Round 1 technical reviews and IAAC may issue additional Round 2 IRs.

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 IAAC 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 and IAAC 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>.

The federal timeline within which the Minister of Environment and Climate Change must make a decision remains suspended (since March 2, 2021). Once Nova Scotia Lands has submitted all Round 1 IR responses, and they are accepted by IAAC, the federal timeline for the EA will resume.

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

Sincerely,

<Original signed by>

Lauchie 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
Ellen Chappell – Health Canada
Bridget Tutty – Nova Scotia Environment
Beth Lewis – Office of L'nu Affairs

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

**Boat Harbour Remediation Project
Information Requirements for the Environmental Impact Statement Review:
July 27, 2022**

INTRODUCTION

The Impact Assessment Agency of Canada (IAAC) is completing its technical review of Nova Scotia Lands Inc.'s responses to the Round 1 Information Requirements for the proposed Boat Harbour Remediation Project. IAAC's review is supported by submissions from government experts. IAAC has determined that additional information is required, as per the information requirements (IRs) below.

ACRONYMS AND SHORT FORMS

%HA	Percent of highly annoyed
ASB	Aeration Stabilization Basin
BHETF	Boat Harbour Effluent Treatment Facility
BHSL	Boat Harbour Stabilization Lagoon
CCME	Canadian Council of Ministers of the Environment
CFIA	Canadian Food Inspection Agency
COC	Chemical of concern
COPC	Contaminant of potential concern
CSM	Conceptual site model
DE	Diesel exhaust
DPM	Diesel particulate matter
EA	Environmental assessment
ECCC	Environment and Climate Change Canada
EDI	Estimated daily intake
EIS	Environmental impact statement
EPC	Exposure point concentration
EQS	Environmental Quality Standards
HC	Health Canada
HELP	Hydrologic Evaluation of Landfill Performance
HHERA	Human Health Ecological Risk Assessment
IAAC	Impact Assessment Agency of Canada
IR	Information requirement
LFG	Landfill gas
MRL	Minimal risk level
NSE	Nova Scotia Environment
NSECC	Nova Scotia Environment and Climate Change
NSL&F	Nova Scotia Department of Lands and Forestry
PEPP	Project Environmental Protection Plan
PLFN	Pictou Landing First Nation
POR	Point of reception
PRA-HHRA	Project Related Activities-Human Health Risk Assessment
RMA	Risk management area

RTDI	Residual tolerable daily intake
SAF	Soil allocation factor
SAR	Species at risk
SSTL	Site-specific target level
SWAC	Surface weighted average concentration
TDI	Tolerable daily intake
TEQ	Toxic equivalent
TPH	Total petroleum hydrocarbons
TRV	Toxicological reference values
UCLM	Upper confidence limit of the mean
VC	Valued component

ATTACHMENT 1: INFORMATION REQUIREMENTS FOR THE BOAT HARBOUR REMEDIATION PROJECT (ROUND 2, PART 1)

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
Human Health Ecological Risk Assessment (HHERA)					
IAAC-33	HC	Section 7.3.7 - Mi'kmaq of Nova Scotia	HHERA (Appendix A), Section 6.4.3	<p>Insufficient information/rationale is provided to support the soil allocation factors (SAFs) used to calculate the site-specific target levels (SSTLs) for vanadium and dioxins and furans.</p> <p><u>Vanadium</u></p> <p>The Proponent's response states, "[a]n SAF of 1 was applied for vanadium, since background exposures (i.e., estimated daily intake or EDI) were included in the evaluation of risk for this contaminant." The EDI represents the total background exposure to a chemical and is not related to potential exposures to contaminants at the site. Any risks posed by contamination at the site should be determined by considering the SAFs. The inclusion of the EDI in the calculation of the SSTL is not related to the use of a specific SAF value.</p> <p>The SAF is the relative proportion that is allowable for soil (or sediment) to constitute in the Residual Tolerable Daily Intake (RTDI = TDI - EDI) from various environmental pathways. When a contaminant of potential concern (COPC) is present in all five media (i.e., air, soil/sediment, food, water, and consumer products), a SAF of 0.2 should be applied. If there is defensible, contaminant-specific evidence that exists which demonstrate that the contaminant is not present in a given medium, the RTDI may be distributed amongst fewer media and the SAF may be increased from 20% to a value given by:</p> $SAF = 100\% / (\text{number of applicable exposure media})^1$ <p>The Proponent excluded water and air from applicable exposure media for vanadium as levels in groundwater/surface water are below the guidelines and levels in soil are below the background concentration (Appendix A of the EIS). The Proponent concluded that "the only applicable exposure media remaining at the Site for vanadium are sediment and food." However, when calculating a SAF, all environmental media in which the contaminant is present (even if it exists at levels below background concentrations and/or the applicable guidelines) should be considered. Given the potential exposures via ingestion of water and inhalation of airborne soil particulates at the site, water and air should be considered as applicable exposure media for vanadium, in addition to sediment and food.</p> <p><u>Dioxins and Furans</u></p> <p>The Proponent's response states "since the EDI associated with background exposure to dioxins/furans is greater than the tolerable daily intake (TDI), theoretically,</p>	<p>A. Update the SAF and SSTL calculations for vanadium to include water and air as applicable exposure media. Should this re-calculation result in an unachievable remediation target, characterize the risk of not meeting the updated SSTL, provide detailed information about the mitigation measures and administrative controls that would be used to manage the risks (including impacts to future land use), and present a high-level overview of the monitoring plan to re-evaluate the risk over time.</p> <p>B. Update the SSTL for dioxins/furans using one of the following recommended alternative methods:</p> <ul style="list-style-type: none"> • Set the SSTL to background concentration¹; or • Calculate provisional SSTLs based on 20% of the TDI, as well as based on 10% of the EDI, in the equations used to calculate the SSTL^{2,3}. Select the lower of the two provisional SSTL values as the SSTL. If the SSTL value is lower than background concentration, set the final SSTL to background concentration. When using this approach, chemical-specific scientific rationale should be provided to verify whether the derived SSTL is protective of human health and has considered relevant toxicological data. <p>Alternatively, should another method be used, provide a detailed rationale for any deviation from the approaches recommended.</p> <p>If the re-calculated SSTL is not technically achievable, characterize the risk of not meeting the SSTL, provide detailed information about the mitigation measures and administrative controls that will be used to manage the risks (including impacts on future land use), and present a high-level overview of the monitoring plan to re-evaluate the risk over time.</p>

¹ CCME. 2006. A Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines. Available at: <https://ccme.ca/en/res/a-protocol-for-the-derivation-of-environmental-and-human-health-soil-quality-guidelines-en.pdf>

² CCME. 2015. Scientific Criteria Document for the Development of the Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health: Nickel. Available at: <https://ccme.ca/en/res/2015-ni-csqs-scd-1540-en.pdf>

³CCME. 2018. Scientific Criteria Document for the Development of the Canadian Soil Quality Guidelines for Zinc, Protection of Environmental and Human Health. Available at: <https://ccme.ca/en/res/2018-zinc-csqs-scd-1577-en.pdf>

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
				<i>residents/Pictou Landing First Nation (PLFN) cannot be safely subjected to any increased exposure. As a result, the Health Canada and CCME default SAF of 0.2 was assumed for dioxins/furans.</i> However, the proposed approach is not consistent with the Canadian Council of the Ministers of the Environment (CCME) protocol recommended to be followed for the derivation of soil quality guidelines in cases where EDI > TDI.	
IAAC-35	HC	Section 7.3.7 - Mi'kmaq of Nova Scotia	HHERA (Appendix A), Sections 6.3 (Toxicity Assessment) and 6.4 (Risk Characterization), Tables H-2.10 to H-2.22 of Appendix H	<p>The sub-chronic Toxicological Reference Values (TRVs) or Minimal Risk Levels (MRLs) set by IAAC for Toxic Substances and Disease Registry are typically meant to be applied for a single period of exposure of specific duration: up to 14 days (acute MRL) and 15 to 364 days (intermediate MRL), and may not be protective of intermittent, repeated annual exposures within these timeframes, which could occur at Boat Harbour.</p> <p>It is unclear from the Proponent's assessment whether the complete elimination of contaminants of potential concern (COPCs) is likely to occur in between exposure events, particularly as an increasing body burden of a COPC can act as an ongoing source of exposure in between exposure events. Information on the bioaccumulation potential and biological elimination half-life of each COPC is required to assess the potential health risks to current and future users of the site from intermittent, repeated annual exposures to sediment contact. The discussion should demonstrate how each sub-chronic TRV and the key study it is based on is appropriate, in place of a chronic TRV.</p>	<p>A. Provide a discussion on how the selected TRVs are appropriate for intermittent, repeated annual exposures on a chemical-specific basis. The discussion should include:</p> <ul style="list-style-type: none"> information on chemical half-lives; duration of the key study that the TRV is based on; and whether peak exposure or total concentration is driving toxicity using the tiered framework^{4,5}. <p>B. In the event the use of a sub-chronic TRV cannot be justified, update the risk assessment using chronic TRV values. Update any SSTLs, as necessary, based on the results of the risk assessment. If any re-calculated SSTLs result in an unachievable remediation target, characterize the risk of not meeting the updated SSTL, provide detailed information about the mitigation measures and administrative controls that will be used to manage the risks (including impacts on future land use), and present a high-level overview of the monitoring plan to re-evaluate the risk over time.</p>
IAAC-36	HC	Section 7.3.7 - Mi'kmaq of Nova Scotia	HHERA (Appendix A), Section 6.1.1.7, Section 4.3.4, Figure 12	<p>The Proponent provided insufficient information/rationale to support the selection of plant species used as surrogates to establish background concentrations.</p> <p>Section 4.2.5.2 of Appendix A of the Human Health and Ecological Risk Assessment (HHERA) outlines an overview of the plant samples collected at the project site, which include a single species of cattails, 4 species of herbaceous plants, and 4 species of berries. However, based on data in Table C-2.3 of Appendix A, only two plant species (i.e., cattails and bugleweed) sampled from the reference wetland were used to establish background concentrations. It remains unclear how the two plant species can serve as adequate surrogates to establish background levels for all the plant species (land and wetland-based) sampled at the project site, including fruit-bearing plants (e.g., berries) and the remaining three species of herbaceous plants.</p>	<p>A. Provide a rationale for the selection of the plant species and tissues used as surrogates to establish background concentrations in all plant species/tissues sampled, including a discussion on uncertainties associated with the selected species.</p>
IAAC-37	HC NSL&F	Section 7.3.7 - Mi'kmaq of Nova Scotia	<p>HHERA (Appendix A), Section 6.4.3.6, Table 6.25 (Uncertainty Analysis)</p> <p>HHERA (Appendix A) Table H-1.12 Occurrence, Distribution, and</p>	<p>The Proponent provided insufficient information/rationale to support the exclusion of human consumption of terrestrial game mammals as an operable exposure pathway.</p> <p>The Proponent's response states that <i>"terrestrial game animals were not included in the HHERA since there were no soil COPCs carried through the HHERA. Further, concentrations of the primary contaminants within the Study Area (i.e., dioxins/furans)</i></p>	<p>A. Update the conceptual site model (CSM) for Human Receptors and the quantitative risk assessment to include consumption of wild game as an operable pathway.</p>

⁴ Health Canada. 2021. Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA). Available at: https://publications.gc.ca/collections/collection_2021/sc-hc/H129-114-2021-eng.pdf.

⁵Harber et al. 2016. Framework for human health risk assessment of non-cancer effects resulting from short-duration and intermittent exposures to chemicals. Journal of Applied Toxicology, 36(9):1077-89.

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
			<p>Identification of Chemicals of Concern (COC) in Game Meat</p> <p>HHERA (Appendix A), Section 6.1.1.10 Game Meat (Mammals) COPCs</p>	<p><i>in soils at the Site are less than CCME background levels for soils across Canada. Concentrations in terrestrial game animals are expected to be consistent with background levels and much lower compared to aquatic wildlife that are directly exposed to the elevated concentrations of dioxins/furans in the sediment and the aquatic food items that have bio-accumulated contaminants from the sediments."</i></p> <p>However, it is inappropriate to screen out COPCs for the country foods pathway based on soil quality guidelines not being exceeded because the CCME dioxins and furans soil quality guidelines for the protection of human health⁶ are only protective of human health from incidental soil ingestion (and not necessarily protective of the food consumption pathway). Health Canada guidance states that, in the absence of guidelines/standards/criteria available for screening an environmental medium (e.g., country foods), the COPCs should be carried forward into a quantitative risk assessment to determine whether there may be health risks associated with the predicted concentrations^{7,8}. Health Canada guidance also recommends that, if receptors may be exposed to COPCs through multiple pathways, all potential exposure pathways should be included, regardless of the COPCs levels as they can still contribute to the overall project-related exposure and associated risks to human health.⁷</p> <p>Furthermore, terrestrial mammals (e.g., snowshoe hare and white-tailed deer) would consume vegetation or other vegetative materials such as seeds and berries and it is known that bioaccumulation can occur in terrestrial game animals.</p>	
Project Related Activities-Human Health Risk Assessment (PRA-HHRA) and Risk Management Plan					
IAAC-40 IAAC-41 IAAC-49 IAAC-50 IAAC-52	HC ECCC	<p>Section 3.2.3- Spatial and Temporal Boundaries</p> <p>Section 7.3.7 - Mi'kmaq of Nova Scotia</p> <p>Part 2, Section 7.1.4 Riparian, wetland and terrestrial environments</p>	<p>EIS, Figure 7.1-1</p> <p>EIS Section 7.3.9.4.3</p> <p>PRA-HHRA (EIS- Appendix A) Figures 3.1 and 3.5</p> <p>Risk Management Plan (Appendix K) of the HHERA (EIS -Appendix A)</p> <p>Coastal Hydraulic Modelling Report (EIS- Appendix Z)</p>	<p>There are still questions around the potential health risks from the resuspension of contaminated sediments remaining in the freshwater wetlands and estuary through the 'suspended sediment in the surface water exposure pathway' and 'country food exposure pathway' in Boat Harbour and out in the Northumberland Strait.</p> <p>The Proponent's response to concerns around the delineation of contaminants in the risk management areas (RMAs) includes only a short conclusive remark that "<i>Multiple sampling programs have been conducted in the Study Area between 2018 and 2019, and through these sampling programs, the presence of COPCs has been sufficiently characterized and significant data gaps are not present</i>". However, no detailed information or clear rationale is provided to verify that the freshwater wetlands and estuary RMAs are sufficiently delineated. For example, RMA2 (Figure K2 of Appendix K of Appendix A) and RMA5 (Figure K-5 of Appendix A) do not appear to be laterally delineated beyond 19-FSP2-SED-32 / 19FSP2-SED-36 and FSP3-SED-12, respectively. While sample FSP3-SED-12 exceeds the dioxins/furans TEQ SSTL, no additional samples were presented beyond this point. Therefore, it is unclear how the delineation of the RMA was determined to be inclusive of all areas exceeding the SSTL and uncertainties remain on whether "hot spots" (i.e., areas with concentrations above the SSTL and</p>	<p>A. Provide a high-level confirmatory sampling plan, including information on:</p> <ul style="list-style-type: none"> the sediment sampling approach (including how sampling locations and number of samples will be determined); the methodology/approach used to determine whether the residual contaminant levels would require additional remediation to adequately protect human health from all potential exposure pathways considered; the methodology/approach used to delineate any additional remediation footprints, if applicable; and the protocol that will be used for "hot spot" areas identified during confirmatory sampling. <p>B. Identify available measures to be implemented in the post-remediation phase should COPC exceedances be identified</p>

⁶ CCME. 2002. Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health POLYCHLORINATED DIBENZO-p-DIOXINS AND POLYCHLORINATED DIBENZOFURANS (PCDD/Fs). Available at: [https://ccme.ca/en/res/polychlorinated-dioxins-and-furans-PCDD/Fs\)pcdd_fscanadian-soil-quality-guidelines-for-the-protection-of-environmental-and-human-health-en.pdf](https://ccme.ca/en/res/polychlorinated-dioxins-and-furans-PCDD/Fs)pcdd_fscanadian-soil-quality-guidelines-for-the-protection-of-environmental-and-human-health-en.pdf)

⁷ Health Canada. 2019. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Human Health Risk Assessment. Available at: <https://publications.gc.ca/site/eng/9.870475/publication.html>

⁸ Health Canada. 2018. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Country Foods. Available at: <https://publications.gc.ca/site/eng/9.855584/publication.html>

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
				<p>significantly higher than surrounding areas) exist in the remaining contaminated sediment.</p> <p>The Proponent’s response to concerns regarding the resuspension and transport of un-remediated sediment with elevated levels of COPCs states “<i>While there may be some elevated concentrations of contaminants above the SSTLs remaining, exposure to these elevated concentrations over extended periods of time would be unlikely and exposure is better characterized based on an average concentration characterized by the 95 percent UCLM [upper confidence level of the mean].</i>” However, as indicated above there are still questions associated with the current delineation of the wetland and estuary RMAs and the amount of contaminants that will remain. Therefore, it remains unclear whether potential still exists for recontamination in the post-remediation phase (e.g. the potential for suspended contaminated material settling back onto the surface sediments and/or un-remediated areas of contaminated sediment above the SSTL migrating back into the dredged areas or out into the Northumberland Strait). The Proponent has not identified the mitigation/risk management measures that would be implemented if monitoring results show that the contaminant concentrations of surface water/sediment/country food reach or exceed predetermined changes in contaminant levels in any follow-up monitoring plan.</p>	<p>during follow-up monitoring and sediments require additional management.</p>
IAAC-42 IAAC-43	HC	Section 7.3.7 - Mi’kmaq of Nova Scotia	PRA-HHRA (EIS- Appendix A), Section 2.1.4	<p>Insufficient information is provided on persistent and bioaccumulative substances present in the sludge dewatering effluent, and associated potential impacts to country food in the BHSL, estuary, and Northumberland Strait. Additionally, it remains unclear whether the pilot scale Geotube study results are sufficiently reliable to evaluate potential risks to human health through recreational water use and country food consumption.</p> <p>The Proponent’s response to IAAC-42 states that “<i>As the predicted concentrations of various COPCs in surface water (including bio accumulative substances) during project related activities are below guidelines for the protection of human health as well as ecological receptors, COPCs in surface water do not pose a risk to human health through direct ingestion or accumulation in country foods.</i>” However, the water quality guidelines (i.e., both the surface water quality guidelines for aquatic life protection^{9,10} and recreational water quality guidelines defined by the Proponent as 10x values of the drinking water quality guidelines¹¹) are not appropriate criteria to address potential contaminant accumulation in country foods via the aquatic food web. Even if concentrations of bioaccumulative contaminants are predicted to be below the water quality screening criteria at the discharge point of the sludge dewatering effluent, these contaminants can still be transported via surface water to the Northumberland Strait, and their characteristics may allow for bioaccumulation in country foods.</p> <p>The Geotube dewatering effluent quality from the Pilot Scale Study (Pilot Scale Testing Construction Report, pdf p.440 to 451) indicates the presence of multiple</p>	<p>A. Update the CSM for Exposure Assessment for Human Receptors – Waste Management to include an operable exposure pathway for consumption of country foods in the Northumberland Strait.</p> <p>B. Provide a discussion on the potential impacts of the sludge dewatering effluent quality, especially bioaccumulative chemicals, to human health through recreational water use and consumption of country food harvested in the BHSL, estuary and Northumberland Strait. Propose monitoring and mitigation measures for potential exposure pathways.</p> <p>C. Provide data for the pilot Geotube effluent samples in a separate table, with clear indications of the type of sample (e.g., removal in the wet, removal in the dry, or composite) and any criteria exceedances. Confirm the number and identity of the pilot Geotube effluent samples tested for TPH. Provide a summary and interpretation of criteria exceedances identified.</p>

⁹ Nova Scotia. 2013. NSE Tier 1 Environmental Quality Standards (EQSs) for Surface Water. Available at : https://novascotia.ca/nse/contaminatedsites/docs/Table_3_Tier1_EQS_for_Surface_Water.pdf

¹⁰ Canadian Council of Ministers of the Environment. Canadian Water Quality Guidelines for the Protection of Aquatic Life. Available at: <https://ccme.ca/en/resources/water-aquatic-life>

¹¹ Health Canada. 2020. Guidelines for Canadian Drinking Water Quality Summary Table. Available at: https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/pdf/pubs/water-eau/sum_guide-res_recom/summary-table-EN-2020-02-11.pdf

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
				<p>bioaccumulative chemicals, including mercury, cadmium, lead, and polycyclic aromatic hydrocarbons (PAHs). Additionally, multiple species of dioxins/furans were also detected in Geotube effluent samples. For example, the mass balance modelling in Table 5.2 predicts that the concentration of 2,3,7,8-tetrachlorodibenzofuran will increase in BHSL surface water during remediation.</p> <p>As the Geotube effluent data from the Pilot Scale Study has been used to model future water quality of the BHSL and estuary, as well as of discharge to the Northumberland Strait, the accuracy of the Geotube effluent quality data obtained during the pilot test is important for evaluating potential risks to human health through recreational water use and country food consumption. However, there are multiple inconsistencies concerning the Geotube effluent data shown in the Pilot Scale Testing Construction Report:</p> <ul style="list-style-type: none"> • The number of samples collected is not clear. • Section 5.1.4 reports that concentrations of modified Total Petroleum Hydrocarbons (TPHs) in two of the three Geotube effluent samples are higher than the maximum Industrial Approval criteria. However, there appear to be five samples of pilot Geotube effluent, collected on different dates, showing TPH exceedances (Table 5.1, Table 5.2, Table 5.5, Table A1, and Table A4). • The presentation of exceedances is not consistent. Section 5.1.3 states that the concentration of all metals are in compliance with the assessment criteria for the composite 1 sample from the Geotube dewatering effluent, whereas the same sample results in Table A4 show exceedances of both cadmium and aluminum. 	
IAAC-50	ECCC	<p>Part 2, Section 7.3.7 Mi'kmaq of Nova Scotia</p> <p>Part 2, Section 7.1.4 Riparian, wetland and terrestrial environments</p>	EIS Section 7.3.9.4.3 Risk Management Plan (Appendix K) of the HHERA (EIS -Appendix A)	<p>The Proponent provided the additional detail requested in terms of how the SSTL is being utilized to further refine the area proposed for active remediation in each wetland and the estuary. However, it is unclear how this approach fits into the proposed Surface Weighted Average Concentration (SWAC) approach proposed to Environment and Climate Change Canada in June 2019 as a means of determining if the dredging has met the remedial goal. For such an approach, the SSTL would be the target, often with a caveat that no single individual sample will be above "X" concentration, even if the SWAC is achieved. It is unclear if this "X" concentration (maximum criteria) has been proposed.</p> <p>It is also unclear whether this approach will be used only for the wetlands and estuary or for the BHSL and associated basins.</p>	<p>A. Clarify how the SSTL approach fits in with the proposed SWAC approach that was proposed to Environment and Climate Change Canada in June 2019. Include whether the maximum criteria have been proposed.</p> <p>B. Clarify whether the SSTL approach will also be used to refine the areas to be dredged in the BHSL and associated basins or if it is proposed for the freshwater wetlands and estuary alone.</p>
Noise					
IAAC-44	HC	Section 7.1.1 Atmospheric Environment	<p>Appendix W Noise Assessment Documentation</p> <p>Section 2 Methodology</p> <p>Appendix W- Noise Assessment Documentation, Table 3.2-1</p> <p>Results of Background Sound Level Measurements (p. 5 to 11)</p>	<p>The baseline noise levels used will impact the calculations used in the determination of the change in percent of highly annoyed (%HA). If current baseline noise levels are lower than those monitored and are more representative of a quiet rural area at some points of reception (PORs), an adjustment may be warranted in the %HA calculations.</p> <p>When measuring baseline noise levels, Health Canada's guidance on evaluating noise impacts in environment assessments¹² recommends that wind speed should not exceed</p>	<p>A. Clarify which noise measurement data points in Table 8 were taken during periods of rain and clarify which data points were disregarded due to inclement weather.</p> <p>B. Clarify what data are being referred to in footnote 3 of Table 8.</p>

¹² Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise. Health Canada. 2017. [Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise - Canada.ca](https://www.canada.ca/en/health-canada/services/environmental-assessment/guidance-for-evaluating-human-health-impacts-in-environmental-assessment-noise.html)

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
			<p>Appendix W - Noise Assessment Documentation, Section 3.1 Observations (p. 4)</p> <p>Appendix W - Noise Assessment Documentation, Section 2 Methodology (p.2)</p>	<p>14 kilometres per hour, any free-field monitor and microphone should be sheltered from exposed areas, there should be no precipitation, and all applicable conditions as per ISO 1996-2:2007¹³ should be met.</p> <p>Information regarding baseline data collection and analysis is missing or insufficient:</p> <p>A. In the Proponent’s response to IAAC-44, although it is indicated in the footnotes for table 8 that “<i>Measurements recorded during inclement weather (winds speeds greater than 14 km/h and/or rain) were disregarded</i>”, the table appears to include measurements recorded during periods of wind speeds exceeding or equal to 14 km/h, as indicated in the right-hand column. It is therefore unclear whether all baseline noise measurements taken during periods of inclement weather (wind speeds ≥14 km/h; precipitation) were disregarded from the baseline data set, or if only the measurements taken during periods of rain were removed.</p> <p>B. Footnote 3 of Table 8 states that “<i>Bolded data represents the lowest measured Leq during the respective monitoring time period.</i>” However, no data are bolded and it is therefore unclear to what this footnote is referring.</p>	
IAAC-45	HC	<p>Section 7.2.1 Changes to the atmospheric environment</p> <p>Section 7.3.7 Mi’kmaq of Nova Scotia</p>	<p>EIS, Figure 7.3-2 - Point-Of-Reception & Operation Location Plan (p. 7-274)</p> <p>EIS, Section 7.3.3.3 - Predicted Changes to Noise (p. 7-273)</p> <p>EIS, Section 7.3.3.5 Project Activities and Noise Interactions and Effects and Mitigation Measures (starting p. 7-275)</p> <p>EIS, Section 7.3.3.6 Noise Monitoring (p. 7-288)</p> <p>EIS, Section 7.3.3.5.4 - Bridge at Highway 348 (p. 7-281) and Section 7.3.3.5.7 - Dam (p. 7-287)</p> <p>EIS, Figure 3.1-8 - Pipeline (p. 3-20)</p> <p>EIS, Table 7.3-49 - Potential Interaction Between Pipeline Decommissioning and Noise and the Significance of the Resulting Potential Effects from the Interactions (p. 7-284)</p>	<p>Given that specific activities are expected to also occur during the night-time hours, evaluating sleep disturbance resulting from night-time noise from each project component is relevant for receptors located near the project site and along the truck traffic routes.</p> <p>The Noise Model Output File (Appendix C of the Proponent’s response to IRs) appears to show the noise levels modelled separately for each noise source (e.g., construction on-site haul route, bulldozer, etc.) and for each POR. The Proponent does not appear to provide any calculations demonstrating how these modelled levels were combined/summed to determine the overall predicted noise levels at each POR indicated in Tables 2.13 and 2.14 in Section 2.2.16 of the Proponent’s response. Sample calculations are required to verify whether or not all noise sources were considered collectively or only individually.</p>	<p>A. Provide sample calculations demonstrating how the modelled levels for each noise source in the Noise Model Output File were combined/summed to determine the overall predicted noise levels at each POR indicated in Tables 2.13 and 2.14 in Section 2.2.16 of the Proponent’s response.</p> <p>B. If modelled levels for each noise source were not combined/summed to determine the overall predicted noise levels at each POR, either:</p> <ul style="list-style-type: none"> • Redo the quantitative noise assessment using the appropriately summed sources (and the updated baseline, if applicable); or • Provide a discussion to justify how the current quantitative assessment results are representative of future levels, including an explanation of the uncertainties/limitations in the assessment and identification of appropriate mitigation measures.

¹³ International Organization for Standardization. 2007. ISO 1996-2:2007, Acoustics — Description, measurement and assessment of environmental noise — Part 2: Determination of environmental noise levels.

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
			<p>EIS, Table 8.1-2 Summary Table of Environmental Impact Assessment (p. 8-11)</p> <p>9.2 Monitoring</p>		
IAAC-48	HC	<p>Section 7.2.1 Changes to the atmospheric environment</p> <p>Section 7.3.7 Mi'kmaq of Nova Scotia</p>	<p>EIS, Section 7.3.3.3 Predicted Changes to Noise (p. 7-273)</p> <p>EIS, Section 7.3.1.1 Predicted Changes to Air Quality and Odour, <i>PM Impacts – Scenario 1 and 7</i> (p. 7-232)</p> <p>EIS, Figure 7.3-2 Point-Of-Reception & Operation Location Plan (p. 7-274)</p> <p>EIS, Section 3.1.2 Dredging (p. 3-11)</p> <p>EIS, Section 3.2 - Project Activities, <i>Site Preparation and Construction</i> (p. 3-32)</p> <p>EIS, Section 3.2.1.2 Dredging (p. 3-38)</p> <p>EIS, Table 7.3-43 Potential interactions Between Wetland Management and Noise and the Significance of the resulting Potential Effects from the Interactions (p. 7-280)</p>	<p>The number of truck trips included in the assessment does not appear to be adequately supported, and it is unclear whether or why some project activities are excluded from the quantitative noise assessment.</p> <p>The Proponent's response lists the assumptions used to calculate truck trips per hour: 10 trucks/daytime hour during construction activities; 2 trucks/daytime hour during remediation; and 2 trucks/daytime hour during demolition activities. In the evaluation of noise impacts, construction, remediation, and demolition are considered to occur simultaneously for what would appear to be a total of 14 truck trips/daytime hour. While the 10 truck trips/daytime hour during construction activities do include 2 truck trips per hour to support the bridge construction, it is unclear how the assumptions were used to calculate a total number of 10 truck trips per daytime hour for the construction/remediation/demolition activities, and at what POR location(s) the 'worst-case scenario' applies to.</p> <p>According to Figures 7.3-5 and 7.3-6 in the Proponent's response, dredging activities in the estuary do not appear to be included in the updated assessment as a noise source. This is particularly important given that the main source of project-related noise at night will be dredging, for which the impact to human health was determined as being moderate in the original noise assessment.</p> <p>In the original noise assessment (EIS Vol IV of V), a +5 dB adjustment for tonality was included, whereas there is no such adjustment in the updated assessment as per the Proponent's response (pdf p. 117). Based on Health Canada guidance (2017), which states that "<i>in situations where more than one source characteristic adjustment is applicable (e.g. impulsive or tonal), only the higher of the adjustments is used,</i>" it is assumed that the tonality adjustment has been removed as a result of the application of the +12 dB impulsive sound adjustment. However, it is unclear whether the +5 dB tonality adjustment was retained for the prediction of noise levels at PORs that are unaffected by impulsive pile driving noise and to which the +12 dB impulsive sound adjustment was not applied. This is particularly relevant for back-up alarms or other types of tonal noise from project related activities.</p> <p>The Proponent's response states, "<i>Construction of access roads and vegetation clearing were not considered in the noise assessment as the project preparation and construction will only include upgrades to existing road networks which would not require any new roads</i>" (pdf p.119). However, it is unclear why activities associated with upgrading roads are excluded from the quantitative noise assessment as vegetation clearing and any upgrades to existing road networks can still involve activities that produce noise and any potential source(s) of noise should be included in the quantitative assessment.</p>	<p>A. Provide clarification on how the number of truck trips/daytime hour was determined. Clarify which POR location(s) will be affected by the 'worst-case scenario', especially considering that some vehicles may be travelling along routes near Pictou Landing First Nation, which may increase noise in the community.</p> <p>B. Clarify whether noise from dredging in the estuary was included in the quantitative noise assessment. If not, update the noise assessment to include noise from dredging in the estuary. Alternatively, provide justification for why it should be excluded.</p> <p>C. Clarify whether the +5 dB adjustment for tonality was applied in the updated quantitative noise assessment for PORs that are unaffected by impulsive pile driving noise (i.e., to which the +12 dB adjustment was not applied). If it was not applied to those PORs, revise the updated noise assessment accordingly. Note that all time-of-day adjustments and the quiet rural area adjustment are to be added to the highest of the applicable source adjustments in the updated noise assessment.</p> <p>D. Include the upgrading of access roads and associated vegetation clearing activities in the quantitative noise assessment. Alternatively, provide additional justification for why this component was excluded from the quantitative noise assessment.</p> <p>Editorial comment: In Table 2.14 of the Proponent's response, the baseline noise levels for POR9 appear to be incorrect as they are indicated as zero. The other associated noise measures in the table for POR9 therefore appear to be incorrect as well. These should be corrected in the final IR submission that will be posted to the registry.</p>

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Drinking Water					
IAAC-53	HC NSECC PLFN	Section 7.3.7 Mi'kmaq of Nova Scotia	EIS: Section 4.4.1.2; Section 7.1.4.1.3; Section 7.3.6.2; Section 7.3.6.4.2 PRA-HHRA (Appendix A): Section 3.1.4.2.2 PRA-HHRA (Appendix A), Section 3.1.4.2, human health screening table H.1.2	The Proponent states that if future monitoring shows exceedances of Health Canada's Guidelines for Canadian Drinking Water Quality, a potable water exclusion zone could be established as part of the provincial <i>Contaminated Sites Regulation</i> and Ministerial Protocol framework. However, according to the provincial <i>Contaminated Sites Regulations</i> and Ministerial Protocol framework the site is considered potable, regardless of current groundwater use. The Notification Protocol defines potable as "all groundwater in the Province outside of municipal water serviced areas, and as determined following Appendix 2, Figure 3 in this protocol." As per the Remediation Levels Protocol, "the determination and applicability of land use and potential groundwater potability must be as described in PRO-100, Notification of Contamination Protocol." Therefore, it is inappropriate to remove the potable groundwater exposure pathway based simply on current groundwater use at the site. The remediation project cannot rely on the "likelihood" of future well locations or groundwater use at the site or defer evaluation to potential future developers. The site must be assessed against potable criteria and the potable groundwater pathway must be considered as part of the remediation project.	A. Update the CSM for Human Receptors and the quantitative risk assessment to include potable groundwater as an applicable exposure media. Provide detailed information about the mitigation measures and administrative controls that will be used to manage any risks identified (including impacts to future land use), and present a high-level overview of the monitoring plan to re-evaluate the risk over time.
Air Quality					
IAAC-57	HC	Section 7.2.1. Changes to the atmospheric environment	Appendix U, Air Quality Impact Analysis (GHD 2020), Table 7.3-2 Air Quality Modelling Scenarios (p.6): Scenario 4, Sources. EIS, Section 3.1.2 Dredging (p.3-11) EIS, Section 7.3.9.4.2 Dredging – Project Activities and Wetlands Interactions and Effects and Mitigation Measures (p.7-423) EIS, Section 7.1.10.3 Human Health, Figure 7.1-54 (p.7-200) Appendix A Human Health Risk Assessment (GHD, 2020), Table 3.1 (p.16) Appendix U Air Quality Impact Analysis (GHD 2020), Table 1.2 (p.6)	It is unclear whether the air quality assessment considers potential air quality changes caused by trucks used for the transportation of excavated waste. The Proponent's response states that "Dredged material described in Scenario 4 (Shoreline Dredging) will not be transported by trucks but pumped by the hydraulic dredges to the containment cell" and that "There is no provision for dry shoreline excavation". However, the Proponent's response does not provide an explanation for a contradictory description in the EIS (Section 3.1.2) where "The shorelines of the ASB [aeration stabilization basin], BHSL [Boat Harbour stabilization lagoon], wetlands and estuary, and the settling basins, and effluent ditches (current and historical) would be mechanically excavated. The material would be loaded directly into a truck (if at shore) or barge (if on the water) and subsequently loaded into a truck for transport for disposal in the containment cell ...".	A. Confirm that the description of the dry shoreline excavation provided in Section 3.1.2 of the EIS should be replaced with the description provided in the IR response and no trucks would be used to transport excavated waste from the shoreline. B. If excavated waste would or may be transported by trucks, confirm that air quality modelling scenarios consider associated air contaminant emissions from these trucks or update the air quality effects assessment to include related air contaminant emissions.
IAAC-54b IAAC-56 IAAC-58	HC NSECC	Section 7.3.7. Mi'kmaq of Nova Scotia	Appendix A Human Health Risk Assessment (GHD, 2020), Section	The health risks posed by air contaminants associated with diesel exhaust (DE) emissions are not sufficiently assessed.	A. Should the post-construction monitoring program identify elevated risks for health impacts (including, but not limited to country foods) from project-associated emissions of

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
			<p>3.1.4.5.2 BHRP-Related Activities Scenario (p.38)</p> <p>PRA-HHRA (located at end of HHERA (Appendix A)), Section 3.3.1</p> <p>Appendix U - Air Quality Impact Analysis Technical Report Section 2.1.2</p>	<p>The Proponent states that <i>“The health effects data published for DPM [diesel particulate matter] include the range of organic species (including PAH and VOCs) that make up DPM. For this reason, additional analyses of the inhalation impact of the individual compounds contained in DPM was not warranted”</i> (Section 2.2.21). However, the full breadth of adverse effects posed by project-associated PAHs and VOCs emissions are not likely to be captured by assessing the health effects of DPM only, given that the component(s) of DE emissions, which is the most toxicologically relevant to the development of lung cancer or other health effects, has not yet been identified. Furthermore, PAHs and VOCs can also be emitted from sources other than diesel vehicles/machinery (e.g., gasoline vehicles).</p> <p>The Proponent provided insufficient rationale for why air deposition of contaminants from diesel emissions onto soil and country foods is not an operable pathway. The Proponent’s response states that <i>“While PAHs do make up a significant portion of DPM, the uptake of PAHs by plants is limited and not considered a viable exposure pathway”</i>. However, air contaminants may directly deposit onto the surface of edible plant tissues, as well as accumulate internally through root uptake. Deposition of contaminants onto the surface of plant tissues and subsequent human consumption may be an operable exposure pathway depending on food preparation and preservation methods, such as washing, peeling, cooking (raw, boiled, fried, baked, grilled, etc.), used by local country food consumers. In addition to emissions from truck traffic, fugitive dust emissions may be released as a result of the construction of the containment cell, including the relocated materials currently in the containment cell, the open face of the containment cell, and the materials end-dumped in the containment cell and allowed to dry out.</p> <p>In addition, the Proponent’s response did not adequately explain why 80% dust control efficiency was selected nor did it justify how an 80% control efficiency can be achieved and maintained using water suppression twice per day under the prevalent meteorological conditions in the Site Study Area. For reference, Table 4 of the <i>Road Dust Emissions from Unpaved Surfaces: Guide to Reporting</i>¹⁴ document, indicates a control efficiency of 55% when water is used for dust suppression twice per day.</p>	<p>VOCs, PAHs, and DPM, describe the mitigation measures or administrative/land use controls in addition to those already proposed, that could be used to manage the risk.</p> <p>B. Provide quantitative evidence to justify a dust control efficiency of 80%. Alternatively, adjust the control efficiency and/or modify the dust suppression plan to be more in line with published data.</p>
IAAC-60	HC PLFN	Section 9.2. Monitoring	<p>EIS, Section 9.2 - Monitoring Programs, Table 9.2-1 (p.9-11)</p> <p>EIS, Section 3.2.3.1- Waste Management (p.3-47)</p> <p>EIS, Table 9.1-1 (p.9-5)</p> <p>Appendix A- Human Health Risk Assessment (GHD, 2020), Section 3.1.2 Identification of Human Receptors (p.17)</p>	<p>It is still unclear whether air contaminants of potential health concerns, including VOCs and Reduced Sulfur Compounds (RSCs) that may be released as part of Landfill Gas (LFG), will be monitored after the site closure (i.e. Containment Cell Final Capping and Grading). The Proponent’s response states that <i>“LFG monitoring will be included as part of post closure care of the containment cell. A LFG monitoring program will be included in the application submitted to NSE for the Industrial Approval Application”</i>. However, it is not certain if these contaminants are considered in the post-closure LFG monitoring program.</p>	<p>A. Update the list of air contaminants for the LFG monitoring plan for the post-closure phase to include VOCs, RSCs, and methane emissions.</p>
Country Foods					

¹⁴ <https://www.canada.ca/en/environment-climate-change/services/national-pollutant-release-inventory/report/sector-specific-tools-calculate-emissions/road-dust-unpaved-surfaces-guide.html>

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IAAC-62 IAAC-63 IAAC-65	HC	Part 2, Section 7.3.7	<p>HHERA, Table H-1.15, Section 6.1.1.12, Section 5.2</p> <p>HHERA (EIS- Appendix A) 6.4.3 Quantitative Interpretation of Health Risks</p> <p>HHERA (EIS- Appendix A) Table H-1.11 Occurrence, Distribution, and Identification of Chemicals of Concern (COC) in Fish (Fillet) Tissue</p>	<p>The Proponent’s responses are insufficient to support the conclusion that COPCs in fish and shellfish from the Northumberland Strait do not pose human health concerns.</p> <ul style="list-style-type: none"> <u>Insufficient rationale to support sediment screening and exclude aluminum, lead and manganese from further consideration in an assessment of health risks from consumption of shellfish</u> <p>The Proponent’s response states that “Aluminum, lead, and manganese were not identified as COPCs in sediment within the Study Area (Freshwater Wetland Areas, the BHSL and Associated Basins, the Estuary, or the Northumberland Strait) as the concentrations of these metals were below applicable screening guidelines.” However, the exposure point concentration (EPC) (i.e., 95% upper confidence limit of mean, or 95% UCLM) for manganese is greater than the sediment quality guideline value for human health protection or the 95% UCLM background concentration (Tables H-1.6 and H-1.7). While the EPCs for aluminum and lead are below the guideline values, screening out COPCs in country foods against sediment quality guidelines is not appropriate^{7,8}. Furthermore, alternative screening criteria, such as background concentrations of lead or aluminum in sediment, are not provided for comparison.</p> <p>The Proponent further states, “In particular, the maximum concentrations of these three metals (aluminum, lead and manganese) in sediment samples collected from the Northumberland Strait in the vicinity of the shellfish sample locations were below human health screening values for direct contact (aluminum - 3100 mg/kg; lead – 3.7 mg/kg; and manganese – 440 mg/kg).” However, the Proponent’s conclusion is based on analytical data from only two samples of the Northumberland Strait sediment (Table H-1.8).</p> <ul style="list-style-type: none"> <u>Insufficient rationale to support that aluminum, lead and manganese in sediment are not bioaccumulative in shellfish</u> <p>The Proponent’s response states that aluminum, lead and manganese “are not considered to be bio-accumulative COPCs”. However, there is evidence in the literature that indicates lead partitions primarily to sediments and bioaccumulates in benthic organisms, and no evidence is provided to support that aluminum and manganese are not bioaccumulative in shellfish.</p> <ul style="list-style-type: none"> <u>Insufficient rationale to support use of background levels for screening of aluminum, lead, manganese and dioxins/furans in shellfish (clams)</u> <p>No rationale was provided to support how the proposed background contaminant concentrations from crab, lobster, and mussels can support proper screening of contaminants in clam tissue and assessment of potential human health risks.</p> <ul style="list-style-type: none"> <u>Insufficient rationale to support screening of arsenic, lead, mercury and dioxins/furans in fish and shellfish</u> <p>No scientific rationale was provided to support how the use of the Canadian Food Inspection Agency (CFIA) guideline values can adequately protect the health of Indigenous and non-Indigenous consumers of non-commercial fish and shellfish</p>	<p>A. Provide quantitative risk assessments of aluminum and manganese for consumers of shellfish (i.e., clams) harvested from the Northumberland Strait.</p> <p>B. Provide updated screening of arsenic, cadmium, lead, mercury, and dioxin/furans in fish and shellfish harvested from the Northumberland Strait against health protective criteria for country food consumers addressing all the data issues that Health Canada noted. Update the quantitative risk assessment where a contaminant exceeds the health-protective criteria.</p> <p>C. In the absence of such a screening, provide a quantitative risk assessment of these contaminants (arsenic, cadmium, lead, mercury and dioxin/furans) for consumers of fish and shellfish harvested from the Northumberland Strait.</p>

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				<p>from the Northumberland Strait, including how their consumption patterns (e.g., serving size and consumption frequency) are comparable to the consumption patterns used in the development of the CFIA guidelines.</p> <p>Specific issues for each contaminant are also explained below.</p> <p><i>Arsenic</i> The Proponent assumes that the measured arsenic levels in whole fish, fish fillet and shellfish samples (Tables H-1.10, H-1.11 and H-1.15) are comparable to background concentrations as both levels are below the analytical detection limit. However, it remains unknown whether the sample measurements are truly different from background levels. Additionally, contrary to the Proponent’s statement, background concentrations of COPCs in shellfish are not provided.</p> <p><i>Cadmium</i> The Proponent also assumes that cadmium levels in whole fish, fish fillet and shellfish samples (Tables H-1.10, H-1.11 and H-1.15) are comparable to background concentrations, which is not properly supported, as explained above. Additionally, the detection limit (0.3 µg/g) appears to be far greater than the health-protective screening criteria value (0.0846 µg/g), which adds further uncertainty about the screening of cadmium.</p> <p><i>Lead</i> The Proponent’s response (Section 2.2.26) states that “<i>In shellfish (clams) collected from Northumberland Strait, lead was detected at concentrations marginally greater than the human health guideline and background. Lead was not identified as COPC in sediment within the Study Area, lead is not associated with the historical activities of the BHETF, and lead is not considered bio-accumulative in sediment.</i>” However, the 95% UCLM (i.e., 1.592 µg/g) appears to be greater than the background concentration (i.e., 0.9 µg/g) although the two groups are not compared with a statistical test.</p> <p><i>Mercury</i> While the Proponent’s response (Section 2.2.25) states that mercury was not detected in shellfish (clams), it appears that no clam samples were analyzed for mercury (Table H-1.15).</p> <p><i>Dioxin/Furans</i> As the 95% UCLM of dioxins/furans in fish is provided only for the contaminated samples, but not for the reference samples (Table H-110), it is unclear whether the levels of dioxins/furans in fish are statistically comparable to background levels as stated by the Proponent (Section 2.2.25). Additionally, the 95% UCLM of dioxins/furans in clams (2.104 µg/g) is greater than background level (0.965 µg/g) (Table H-1-15) and the two values are not compared with a statistical test.</p>	
IAAC-64	HC	Part 2, Section 7.3.7	HHERA (EIS- Appendix A), Section 6.4.3.6 (p.143)	The Proponent’s response states that “ <i>The discussion of the alternative absorption factors in Section 6.4.3.6 of the HHERA (Appendix A of the EIS) provides support that assuming 100 percent absorption of the COPCs is an overly conservative approach given</i>	A. In the absence of an additional rationale to support the use of the proposed U.S. Environmental Protection Agency gastrointestinal absorption factors of less than 1.0, the

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
				<i>that the available absorption factors published in the literature indicate a lower absorption from oral exposure.</i> No additional rationale was provided.	proponent is required to provide detailed information about mitigation measures, residual effects, and follow-up monitoring plan associated with the risk assessment results based on an absorption factor of 1.0 for cadmium and vanadium.
Migratory Birds and Species at Risk					
IAAC-18	IAAC ECCC	Part 2, Section 7.3.5	Section 7.3.13.5	The Proponent's response provided a prediction of temporary or permanent bird habitat loss, however the size (in hectares) of the regional and local study areas are required for IAAC to assess the effects of the Project on migratory birds and the significance of the effects.	A. Provide the available migratory bird habitat area (in hectares) of the regional study area and local study area.
IAAC-21	NSECC	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	<p>The Proponent's response to IAAC-21 states: <i>"Monitoring requirements for potential SAR [species at risk] to be removed are included in the PEPP [Project Environmental Protection Plan] and are also outlined below."</i></p> <p>An explanation is required of what "removal" means in the context of the Project. Removal is not an acceptable mitigation option. Any removal of SAR or impacts to habitat that occurs on private or provincial Crown land unless under permit is a contravention of the Nova Scotia <i>Endangered Species Act</i>.</p> <p>The response to IAAC-21 also states the Proponent will <i>"Establish a 300 m buffer around Piping Plover nests found during surveys (to remain in place until the young have naturally left)."</i> A reference for this buffer distance was not provided.</p>	<p>A. Clarify what "removal" means in this statement: <i>"Monitoring requirements for potential SAR to be removed are included in the PEPP and are also outlined below."</i></p> <p>B. Provide a reference for using a 300 m buffer around Piping Plover nests.</p>
Waste and Water Management					
IAAC-73	IAAC NSECC		<p>RODD – Section 4.4 and Appendix H EIS – Section 2.3.1 EIS – Section 3 – Project Description</p> <p>EIS – Section 3.2.2.1</p> <p>Pilot Scale Testing Construction Report (GHD, December 23, 2019) - Section 3.3.4</p> <p>Pilot Scale Testing Construction Report (GHD, December 23, 2019) - Section 3.5.5 Geobag Loading Analysis, Donald F. Hayes</p> <p>Pilot Scale Testing Construction Report (GHD, December 23, 2019)</p> <p>EIS – Sections 2.3.8 and 3.1.3 HHERA – Appendix A</p>	<p>The Proponent's response to IAAC-73 states <i>"If the cell were to reach capacity, the excess contaminated soil, deemed non-hazardous, would be disposed off-site. The remedial sequencing is planned to remove all material that may be potentially hazardous prior to the removal of non-hazardous contaminated soil."</i></p> <p>It remains unclear how much contaminated soil is considered non-hazardous and how it will be segregated and stored for possible off-site disposal. It is also unclear whether this scenario has been considered in the Accidents and Malfunctions assessment.</p>	<p>A. Describe how non-hazardous material will be identified, segregated and stored for off-site disposal if the containment cell reached capacity before remedial activities were concluded.</p> <p>B. Update the Accidents and Malfunctions assessment, as necessary, to consider the transportation of non-hazardous materials to an off-site disposal facility.</p>

IR Number	External Reviewer ID	Reference to EIS Guidelines	Reference to EIS	Context and Rationale	Specific Question/Information Requirement
IAAC-74 IAAC-75 IAAC-76	IAAC PLFN NSECC	Part 2, Section 2.2	EIS Section 3.2.2.1	<p>The Proponent’s response to IAAC-74 indicates that non-dredged loose sludge will be placed in the cell after bulk dewatering has been complete. It is unclear from the information provided how infilling between geotubes will occur or whether the approach could result in cavities within the cell that could result in geotubes shifting during vertical placement. It also remains unclear from the Proponent’s response to IAAC-75 whether conventional compaction equipment would be able to maneuver on the geotubes.</p> <p>The Proponent’s response to IAAC-76 indicated that material would be dewatered or allowed to dry out prior to placement in the containment cell to ensure it is of reasonable quality to permit compaction. However, it is unclear how materials will be dried out, where the materials will be staged during the drying out process, and how the associated dewatering leachate will be managed. In addition, it is unclear whether conventional compaction equipment would be able to maneuver on the Geotubes.</p> <p>Nova Scotia Environment and Climate Change noted that the final cover materials and 4H:1V side slopes assumed in the Hydrologic Evaluation of Landfill Performance (HELP) closure model scenario, as well as the contingency option of 3H:1V side slopes do not align with the guidance outlined in the <i>Nova Scotia Industrial Landfill Guidelines</i>.</p> <p>Insufficient information has been provided to demonstrate the containment cell location and design have been established in accordance with the criteria set out in <i>CCME National Guidelines for Hazardous Waste Landfills</i>. NSECC noted that potential issues with the design of the containment cell include depth and permeability of substrate below the cell, thickness of clay and composite layer.</p>	<p>A. Describe how conventional compaction equipment can be maneuvered on the containment cell considering the presence of geotubes, including any limitations or potential issues.</p> <p>B. Describe whether cavities would have the potential to occur, and how they would impact the containment cell and geotubes.</p> <p>C. Describe how materials will be permitted to dry out, where the drying out process will take place, and how the associated dewatering leachate will be managed.</p> <p>D. Clarify whether the <i>Nova Scotia Industrial Landfill Guidelines</i> and <i>CCME National Guidelines for Hazardous Waste Landfills</i> were used when designing the containment cell and determining its location.</p>
IAAC-13	NSECC	Part 2, Section 3.1 Part 2, Section 7.2.2	Section 3.1.1	<p>The response to IAAC-13 indicates that the forecasted leachate quality was projected based on the pilot scale testing results and reflects maximum concentrations. The forecasted leachate quality presented in Table 2.19 was reported to meet NSE groundwater criteria except for TPH (Lube); however, no information was provided to indicate that TPH (Lube) exceedances would be treated.</p> <p>In addition, forecasted leachate quality in Table 2.19 was compared to NSE Tier 2 Table 3 Groundwater Discharge to Surface Water (Marine) Greater than 10m from the Surface Water Body. However, if the “pre-treated effluent” characterized within Table 2.19 is proposed to be discharged directly into the estuary, as reported, then the analytical results should be compared to surface water criteria (i.e. Table 3 - Nova Scotia Tier I Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water (µg/L)) - in particular the values for Surface Water (Including Groundwater < 10m from Surface Water Body). Comparison to the Marine surface water criteria in Table 3, applicable to a direct discharge scenario, would identify exceedances of several parameters beyond those reported. Comparison should also be made to potable groundwater criteria.</p>	<p>A. Update Table 2.19 to compare to proper criteria and identify any parameters that exceed guidelines. Describe additional mitigation or treatment measures to ensure compliance.</p>
IAAC-15	NSECC	Part 2, Section 7.2.2	Section 7.3.6 Appendix Z	<p>The Proponent proposes to place impermeable silt curtains between the active dredging area and other cells and open water. During a meeting with PLFN (March 3, 2022), it was stated by the Proponent that double silt curtains would be used.</p>	<p>A. Clarify whether single or double silt curtains will be used during dredging activities.</p>

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				<p>It is unclear from the EIS whether a single wall of curtains with no redundancy is proposed, or if double silt curtains will be used.</p> <p>The response to IAAC-15 states: <i>“Drawing DR-C-34, detail 1 in Appendix A provides details of how the silt curtains will be installed.”</i> However, this figure could not be found in Appendix A.</p>	<p>B. Provide the location of Drawing DR-C-34 which provides details of how the silt curtains will be installed.</p>
General Methodology					
<p>IAAC-01 IAAC-61</p>	<p>IAAC HC</p>	<p>Part 1, Section 4.3 Part 2, Section 7.5</p>	<p>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</p>	<p>No additional information or rationale was provided regarding Valued Component (VC)-specific definitions of each category of magnitude.</p> <p>The EIS describes magnitude categories of environmental effects in general terms in Table 7.2-4. Although the EIS defines what a significant adverse effect to each VC would be, it does not provide clear VC-specific definitions for each category of magnitude.</p> <p>The magnitude of residual effects in Table 7.2-4 of the EIS were determined partly based on whether the effects deviate from the baseline conditions within (or outside of) “the range of natural variation” or whether the effects “marginally” exceed the guideline values. For each VC it is unclear what the range of natural variation is and what the marginal exceedance scale is in relation to the baseline conditions and applicable guideline values, respectively.</p> <p>VC-specific magnitude definitions are important for IAAC and other readers to understand the basis for the Proponent’s determination, so that it can be assessed objectively.</p>	<p>A. Provide VC-specific definitions for each category of magnitude in a table, using quantifiable terms when possible.</p> <p>B. When using a comparison to guidelines, thresholds, or other measurable parameters to define magnitude, identify the specific guidelines or thresholds used. If magnitude definitions include terms such as “range of natural variation” or “marginal exceedance”, specify the range of natural variation and marginal exceedance scale in relation to the baseline/background conditions or specific guidelines, respectively.</p> <p>C. Where magnitude definitions change, indicate if updates also result in changes to the effects assessment, required mitigation, and conclusions on the potential for significant adverse effects.</p>