

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Acoustic Environment	Health Canada suggests that in determining significance a greater emphasis be placed on noise levels during the evening and overnight hours in order to be protective against sleep disturbance.	Health Canada	The Significance criteria can be adjusted in Section 8.2.1.2 to state "For the purpose of this threshold, "prolonged" is defined as a continuous period of 8 hours". This would place additional sensitivity in the night hours. The Impact Evaluation/Effects Assessment did assess the impact of construction and operational activities during the evening and nighttime and since the predicted noise levels were below the applicable time-of-day significance thresholds, the residual effects of the Project on the acoustic environment during construction were determined to be not significant.
Acoustic Environment	Given that all of these variables have implications with respect to noise propagation, this information should be presented in the EA in order to determine the adequacy of the baseline sound pressure levels. (All testing was done in Dec 2017, no info presented with respect to ground cover)	Health Canada	During the monitoring event, the ground cover was bare ground, with no snow on the ground. Temperature data were provided in Appendix L of the submission. Wind data were available from local weather stations and can be included with the temperature data within this revision. Details on mitigation measures to reduce night-time construction noise during HDD are answered above. During construction activities, construction noise monitoring will be undertaken at selected receptors previously monitored to determine if construction noise exceeds predicted levels and NSE Noise Guidelines. If noise guidelines are exceeded on a prolonged basis, or if noise levels at receptors exceed 10 dBA above ambient noise levels, then additional mitigation measures will be implemented during the night-time. This could include changing the construction schedule so the noisiest activities occurring during the daytime, and potentially installing temporary sound barriers (e.g.: sound blankets or equivalent) to reduce the sound levels at nearby residences.
Acoustic Environment	Health Canada requests additional information related to mitigation measures that would be implemented in the event of night-time construction noise in order to reduce the potential for annoyance and sleep disturbance to nearby human receptors. See Health Canada (2017b) and the WHO (1999; 2009) for more information.	Health Canada	

Valued Environmental Component (VEC)	Concern	Source	Response Comment															
Acoustic Environment	The noise impact study that was undertaken, however, did not consider the impacts of the HDD as a noise source as evidenced in Table 8.2-2. Excluding the noise impacts of the HDD is likely to underestimate the impacts of the project on the acoustic environment. If horizontal directional drilling is undertaken during project construction, further consideration will be needed for the “elevated noise emissions” generated by the HDD for mitigating impacts to the acoustic environment.	Nova Scotia Environment – Environmental Health Unit	<p>The noise monitoring and modelling conducted for the Project did not consider the impacts of the Horizontal Directional Drilling (HDD) as a potential noise source. In order to address this gap, noise modelling was completed to determine potential noise impacts at receptors related to HDD. The exact locations where HDD will occur is still being considered, but the summary provided in Table 1, is intended to provide a range of noise impacts at receptors at certain distances from the proposed HDD activities. The summary provided in Table 1 was calculated using the Road Construction Noise Model (RCNM) modified to include information regarding HDD. The results in Table 1 include the predicted equivalent noise level (Leq) without mitigation and with mitigation activities taken into consideration. For the purposes of the assessment, the mitigation included installing outdoor sound blankets or equivalent system that attenuate the noise from the HDD activities. Based on manufacturer specifications, outdoor sound blankets or equivalent systems that are properly installed and maintained can reduce sound levels between 20 and 30 dBA. For the purposes of the modelling, a conservative estimate of a 20 dBA reduction from the sound blankets was used. An equivalent system could include placement of stacked sea containers between the HDD source and receptor.</p> <p>Table 1. Predicted Sound levels for standard suburban residents with and without mitigation at discrete distances from HDD activities. (HDD includes the HDD rig, dump truck, excavator and front end loader required).</p> <table border="1"> <thead> <tr> <th>Receptor (distance from HDD site)</th> <th colspan="2">Predicted Leq (dBA)</th> </tr> <tr> <th></th> <th>Predicted Leq</th> <th>with Mitigation</th> </tr> </thead> <tbody> <tr> <td>50 m</td> <td>75.0</td> <td>55</td> </tr> <tr> <td>100 m</td> <td>69.3</td> <td>49.3</td> </tr> <tr> <td>150 m</td> <td>65.8</td> <td>45.8</td> </tr> </tbody> </table>	Receptor (distance from HDD site)	Predicted Leq (dBA)			Predicted Leq	with Mitigation	50 m	75.0	55	100 m	69.3	49.3	150 m	65.8	45.8
Receptor (distance from HDD site)	Predicted Leq (dBA)																	
	Predicted Leq	with Mitigation																
50 m	75.0	55																
100 m	69.3	49.3																
150 m	65.8	45.8																
Atmospheric Environment	Consider evaluating these seven VOCs as part of the air monitoring program in order to evaluate any future changes and compare the future measured concentrations to applicable guideline values in order to be protective of human health.	Health Canada	Refer to Section 6.3 regarding ambient air monitoring															
Atmospheric Environment	Health Canada requests that additional information be provided to explain how other air contaminant emissions will be identified (and mitigated as necessary) given the limited number of contaminants that will be monitored as part of the air monitoring program.	Health Canada	Refer to Section 6.3 regarding ambient air monitoring															
Atmospheric Environment	With respect to proposed venting manholes within highway right-of-way, confirmation would be required that there would be no emissions of noxious or unpleasant/unfavourable vapours, gases or odours, or health/safety/environmental concerns to TIR maintenance staff or the public and that they would only be vented during start-up after an ill shut-down when flow resumes through the pipeline.	Nova Scotia Department of Transportation and Infrastructure Renewal	Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.															
Atmospheric Environment	The Air Dispersion Modeling Study limited the evaluation to air contaminants identified in Schedule A of the Air Quality Regulations and the current Operating Approval for the mill. The proponent should have identified the full air emissions inventory for the facility and modeled all potential air contaminants of concern, as a result of the proposed project.	Nova Scotia Environment – Air Quality Unit	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.															

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Atmospheric Environment	An updated ambient air monitoring plan based on the air dispersion modeling results should be provided. This plan should include the identification and proposed location of additional monitor(s).	Nova Scotia Environment – Air Quality Unit	Refer to Section 6.3 regarding ambient air monitoring
Atmospheric Environment	Section 4 of the Air Dispersion Modeling Study indicates that the mill will conduct a pilot study on the co-combustion of hog fuel and wastewater sludge in the power boiler. Details of the proposed pilot study should be included as part of the Division V Application for Approval. The study plan should include, but not be limited to:a. Proposed volume of fuels to be burned, fuel mixtures, fuel feed rates;b. Proposed fuel feed method;c. Analytical characterization of the wastewater sludge to identify the contaminants of concern;d. Comparison of the wastewater sludge with existing fuel characterization;e. Proposed contaminants of concern for testing;f. Proposed test methodologies;g. Identification of air quality standards proposed for comparison during testing;h. Proposed operating conditions of the power boiler during testing;i. Proposed testing scenarios to demonstrate that testing will be conducted for the cases when the highest concentration of air contaminants would occur.Depending on the results of the study, further modeling and testing may be required.	Nova Scotia Environment – Air Quality Unit	Refer to section 6.2 for comments concerning air dispersion modelling.
Atmospheric Environment	The Division V Application for Approval should include an alternate method for sludge disposal in case the pilot study for co-combustion proves unsuccessful.	Nova Scotia Environment – Air Quality Unit	Will be addressed in the IA and with discussion with NSE
Atmospheric Environment	The Division V Application for Approval should include an environmental response plan to address any malfunctions or upset conditions at the power boiler resulting from the co-combustion of wastewater sludge with primary fuels.	Nova Scotia Environment – Air Quality Unit	Will be addressed in the IA and with discussion with NSE
Atmospheric Environment	The Division V Application should include odor mitigation strategies for operations as a result of the proposed activity.	Nova Scotia Environment – Air Quality Unit	Will be addressed in the IA and with discussion with NSE
Atmospheric Environment	The following issues should be addressed in an updated Air Dispersion Modeling Study:a. The mill is authorized to operate at an annual production rate of 330 000 air dried metric tonnes/year. The air dispersion modeling study indicates that the mill currently produces between 280 000 to 300 000 air dried metric tonnes per year. The air dispersion modelling should represent results for the mill under its authorized production rate.b. The Tables of Emissions included in the Emissions Inventory Section provides the emission rates of air contaminants for the mill sources. The “Other Mill Point Sources” category should be broken down to individual mill point sources and include the specific modeled emission rate for each source.c. Sections 6.1 and 6.2 of the Air Dispersion Modeling Study should identify the maximum predicted concentrations of the modeling and the specific UTM Coordinates for the maximum concentration location	Nova Scotia Environment – Air Quality Unit	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	It is recommended that the proponent provide the estimated direct and indirect greenhouse emissions that are expected during this phase to confirm the immateriality conclusion.	Nova Scotia Environment – Climate Change Unit	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	It is recommended that the proponent should consider estimating the direct and indirect greenhouse emissions that are expected during the operation phase of the project. Where necessary the biogenic carbon content of the proposed sludge fuel should be estimated using methodology available in the Nova Scotia Greenhouse Gas Quantification, Reporting and Verification Standards.	Nova Scotia Environment – Climate Change Unit	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. Refer to section 6.2 for comments concerning air dispersion modelling.
Atmospheric Environment	It is recommended that the proponent commits to these further tests to re-estimate the expected reductions in CH4 emissions from the Effluent Treatment Facility, and expected reductions of CO2 emissions from the boiler. Refer to Appendix K	Nova Scotia Environment – Climate Change Unit	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. Refer to section 6.2 for comments concerning air dispersion modelling.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Atmospheric Environment	Unregulated substances that may be present in air emissions were not assessed with respect to their impact on air quality and human health, which may result in an underestimation of atmospheric impacts related to this project.	Nova Scotia Environment – Environmental Health Unit	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	A US EPA rule is referenced to support the proposal to co-combust sludge in the mill boilers. No evidence or analysis is provided, however, to demonstrate that the sludge produced as part of this project will comply with existing requirements related to the application of the EPA rule	Nova Scotia Environment – Environmental Health Unit	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	Little information has been provided to indicate whether the sludge material from the Effluent Treatment Facility (ETF) will satisfy these conditions in order to achieve the objective of displacing the use of fossil fuels.	Nova Scotia Environment - Resource Management Unit	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. Refer to section 6.2 for comments concerning air dispersion modelling.
Atmospheric Environment	The composition of the sludge material has not been defined and it is unclear whether any additional contaminants of concern should be assessed and considered in the model calculations	Nova Scotia Environment - Resource Management Unit	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data. Refer to section 6.2 for comments concerning air dispersion modelling.
Atmospheric Environment	The EARD does not discuss measures to control odours from the new treatment system during times of upset conditions.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to section 6.2 for comments concerning air dispersion modelling.
Atmospheric Environment	The environmental assessment registration document (“EARD”) filed by Northern Pulp establishes that there are a number of studies that are missing, not complete or require additional data collection before a full assessment of the impacts of the Project on the environment can be undertaken. In short, baseline information is lacking. There is no doubt that the Project will lead to the discharge of known contaminants into the waters of the Northumberland Strait and that the adverse impacts of those substances are not fully understood at this time. The same is true of the impacts of burning sludge in the power boiler - this will certainly lead to the emission of contaminants into the air, but these too are not fully understood at this time. For the reasons that follow, the only approach that respects the significance of the risks to Pictou Landing First Nation Aboriginal and Treaty rights is a full environmental assessment report	Pictou Landing First Nation	Refer to Section 4.3 for results of the receiving water study. Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	The mill at Abercrombie Point is located approximately 6 kilometers Southwest of IR 24 where the Pictou Landing First Nation makes its home. The prevailing winds blow from the mill in the direction of the Pictou Landing First Nation: EARD, Appendix K, pp. 9-12.	Pictou Landing First Nation	Refer to section 6.2 for comments concerning air dispersion modelling.
Atmospheric Environment	Sludge collected from the effluent treatment process is proposed to be burned as fuel in the power boiler of the mill: EARD, p. 45. The EARD does not indicate the volume of sludge to be burned but does indicate that it will be burned with the existing hog fuel in a ratio of 7 parts hog fuel to 1 part sludge: EARD, Appendix K, p. 7. In terms of rate of total particulate matter (TSP) emitted into the air during operations, Stantec predicts this to be 8.38 grams/second: Appendix K, p. 7. This equates to 257,755 kilograms per year. Not all of the anticipated emitted TSP will be attributable to the burning of sludge, but this gives an idea of the volumes emitted by the mill. Adding to the complexity of the Project is the fact that the composition of the sludge is unknown at present: EARD, Appendix K, p. 6.	Pictou Landing First Nation	Refer to section 6.2 for comments concerning air dispersion modelling.
Atmospheric Environment	pulp and paper mills and their effluent treatment processes emit more air contaminants than those identified in the Stantec report. These include: volatile organic compounds (VOCs) and total reduced Sulphur (TRS) compounds consisting of H <sub>2</sub> S, methyl mercaptan, dimethyl sulphide, dimethyl disulphide as well as chlorinated compounds.	Pictou Landing First Nation	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Atmospheric Environment	There are existing guidelines on the contaminants released by the burning of effluent sludge. EARD, Appendix K, p. 6. These guidelines identify contaminants of concern. These contaminants were not addressed by Stantec.	Pictou Landing First Nation	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	ADMGO requires, as a first step in the air modelling process, a source summary table for all contaminants emitted including a full rationale for any contaminants deemed insignificant. This was not done in the Stantec analysis and is a serious omission. As noted above, Stantec focused only on regulated contaminants.	Pictou Landing First Nation	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	Northern Pulp should provide a source summary table of all contaminants of interest.	Pictou Landing First Nation	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	ADMGO lays out an emission summary and dispersion modelling (ESDM) procedure to be followed. This requires that sample calculations be provided detailing emission rates determined, significance of each possible contaminant and emission factor ratings assigned to all possible contaminants. The analysis should take into account future changes. For example in Ontario, sulphur dioxide will be reduced from 275 µg/m <sup>3</sup> (1- hour) and 690 µg/m <sup>3</sup> (24-hour) to 100 µg/m <sup>3</sup> (1-hour) and 10 µg/m <sup>3</sup> (annual) in the year 2023. This not discussed in the EARD.	Pictou Landing First Nation	Refer to section 6.2 for comments concerning air dispersion modelling.
Atmospheric Environment	Without knowing the terms of a new Industrial Approval, it is impossible to know what mitigating impacts the Industrial Approval may have on the potential adverse impacts from contaminants in the effluent and air emissions.	Pictou Landing First Nation	Will be addressed in the IA and with discussion with NSE
Atmospheric Environment	Air quality standards are governed by the Nova Scotia Air Quality Regulations: EARD, p. 135. However, as noted above, the contaminants regulated under those regulations are limited in scope compared to the potential contaminants known to be generated in the pulp and paper industry and from burning sludge. Compliance with the Air Quality Regulations will not mitigate the adverse impacts of other contaminants.	Pictou Landing First Nation	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	Provide a source summary table for all contaminants emitted from the ETF and the Kraft Pulp Mill facility in accordance with the ADMGO, including a full rationale for justification of any contaminants deemed insignificant.	Pictou Landing First Nation	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	Identify emission factors representative of the processes to assess potential contaminants of interest not included in priority contaminants assessed. (e.g. AP-42 Chapter 10.2 Chemical Wood Pulping, Table 10.2-1 lists Methyl mercaptan, Dimethyl sulfide and Dimethyl disulfide emissions (Emission Factor Rating: A); AP-42 Chapter 1.6 Wood Residue Combustion in Boilers; and AP-42 Sewage Sludge Incineration Chapter 2.2, Table 2.2-3.)	Pictou Landing First Nation	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	Assess emissions of odorous contaminants at 10- minute time interval based on criteria in Ontario Air Contaminants Benchmark (ACB) list.	Pictou Landing First Nation	Refer to section 6.2 for comments concerning air dispersion modelling.
Atmospheric Environment	The assessment of future operations should also consider the potential of changes in regulatory criteria. In particular, sulphur dioxide which in Ontario will be reduced from 275 µg/m <sup>3</sup> (1- hour) and 690 µg/m <sup>3</sup> (24- hour) to 100 µg/m <sup>3</sup> (1 -hour) and 10 µg/m <sup>3</sup> (annual) in 2023.	Pictou Landing First Nation	Refer to section 6.2 for comments concerning air dispersion modelling.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Atmospheric Environment	Emission factors used, for burning of sludge, by Stantec were US EPA AP-42 Chapter 2.2 Sewage Sludge Incineration for CO, SO <sub>2</sub> , NO <sub>x</sub> , TSP, and PM <sub>2.5</sub> . Both this reference and AP-42 Chapter 1.6 Wood Residue Combustion in Boilers lists other contaminants of interest that were not included in the assessment. Regardless of emission factor reference consideration should be given to assess all contaminants of interest within the reference chosen. EXP recommends:i. Provide a source summary table for all contaminants emitted from the ETF and the Kraft Pulp Mill facility in accordance with the ADMGO.ii. Provide sample calculations detailing emission rates determined, significance of contaminant, and emission factor rating in accordance with the ESDM Procedure.iii. Include assessment of emissions of potential contaminants from combustion of sludge and hog fuel in addition to priority contaminants.	Pictou Landing First Nation	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	the 2019 Stantec air modelling report limited itself to an analysis of those few contaminants currently regulated in Nova Scotia either under the Air Quality Regulations or under the existing industrial approval applicable to Northern Pulp's operations: EARD, Appendix K, pp. i and ii.	Pictou Landing First Nation	An additional air quality study entitled "Expanded Air Dispersion Modelling Study" was conducted by Stantec Consulting Ltd. (Stantec 2019, dated September 27, 2019) and referred to in Section 6.1
Atmospheric Environment	emissions of odorous contaminants should be assessed based on the criteria in the Ontario Air Contaminants Benchmark (ACB) list.	Pictou Landing First Nation	Refer to section 6.2 for comments concerning air dispersion modelling.
Atmospheric Environment	The limited information in the Environmental Assessment Registration Document regarding the potential for increased (new) toxins and/or odours produced as a result of the relocation of the Activated Sludge Treatment (AST) facility to Abercrombie Point, the burning of sludge in the power boiler, and the venting of air as part of the transmission of warm effluent through the Town of Pictou.	Town of Pictou	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	The Pictou West area, including the Town of Pictou is the recipient of a significant portion of the air emissions from the mill operations as shown in (Appendix E, Figures 1 and 2, Pages 3 and 5). As a result of this, residents and visitors alike have complained about the emissions including concerns for the long term effects on their health. Numerous studies suggest that higher levels of certain illnesses are evident in the area. For many years, dining and accommodation operators have also expressed concern about lost revenue as the result of odours associated with the air emissions from the mill.	Town of Pictou	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	With the relocation of the Activated Sludge Treatment (AST) Facility to Abercrombie Point we are concerned that new odours, similar to those that have been a problem around Boat Harbour since the mill was made operational, might have a tendency to 'drift' in the Town's direction.	Town of Pictou	Refer to section 6.2 for comments concerning air dispersion modelling.
Atmospheric Environment	Additional contaminants in the emissions from the Power Boiler when the sludge from the new treatment facility is incinerated will also be of concern. The Environmental Assessment fails to provide comfort that particulate emission and odours will be handled to the Town's satisfaction.	Town of Pictou	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	An additional concern exists regarding the proposed venting along the on-land portion of the effluent pipe. It is our understanding the vent must be placed at a high point in the transmission line which could be between the Harvey A. Veniot Causeway and the Pictou Rotary. If this is to be the case, we expect that there could be additional odours from the warm treated effluent at that location.	Town of Pictou	Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Atmospheric Environment	The Town also has concerns about any potential for increased odour produced by the re-location of the AST (Activated Sludge Treatment) process and risks associated with the emissions from the power boiler when the sludge is burned. We do not have in-house expertise to adequately assess potential effects and how they might affect air quality (safety).	Town of Pictou	Refer to section 6.1 for comments concerning potential air contaminants.
Effects of the Environment on the Project	It is recommended that the proponent consider the combined effects of warmer temperatures as a result of climate change and project activities on water quality of Northumberland Strait and Caribou Harbour.	Nova Scotia Environment – Climate Change Unit	Climate change was considered in the preparation of the Receiving Water Study. More details are available in Section 4.2 and Addendum 3.0.
Effects of the Environment on the Project	Details of the design storm (i.e. 1 in 100 year storm with a 24 hour duration) for the spill collection system basin should be provided.	Pictou Landing First Nation	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
Effects of the Environment on the Project	There is no mention of sea level rise in this or the main report of the engineered life time of the facility. This becomes important in addressing the impact/adaptation strategies required for handling changing climate; in particular sea level rise for this assignment. There is no indication in either report of how the modelling results would differ with rising sea level.	Pictou Landing First Nation	Refer to section 4.2 for comments concerning the receiving water study.
ETF Design Concerns	Technical details associated with the method of sludge dewatering and proposed operational or physical modifications to the power boiler to manage sludge, should be provided with the Application for Approval under Division V of the Activities Designation Regulations.	Nova Scotia Environment – Air Quality Unit	NPNS will work closely with NSE to determine the proper requirements. There are no expected modifications to the power boiler being necessary to burn the biosludge. The biosludge will be mixed with the current biomass that is being fed to the power boiler today.
ETF Design Concerns	The rationale for the adequacy of the proposed Spill Basin size is not clear in the current submission. It is recommended that details regarding the rationale and adequacy of the proposed Spill Basin size be provided to confirm the effectiveness of this proposed mitigation measure.	Nova Scotia Environment – Industrial Management Unit	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
ETF Design Concerns	Additional details for the spill basin are required prior to construction, including details of operation and maintenance that outline the measures that will be taken to mitigate the risk of overflow, failure, and/or accidental release of substances from the basin.	Nova Scotia Environment – Industrial Management Unit	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
ETF Design Concerns	potential contaminants of concern that are not listed in the follow-up study: o Nutrients (nitrogen and phosphorus compounds) o pH o PAHs o Specific chlorophenolic compounds o Specific non-chlorinated phenolic compounds o Specific resin compounds, in addition to resin fatty acids o Chlorinated VOCs o Total petroleum hydrocarbons, and/or other relevant hydrocarbon parameters	Nova Scotia Environment – Water Management Unit	Refer to section 2.3 for comments concerning the physical and chemical characterization of NPNS' present raw wastewater and the proposed technology for treatment.
ETF Design Concerns	There is no discussion of reportable detection limits for the associated laboratory analysis of the parameters, and applicable federal/provincial criteria for results assessment. The following are potential water quality analysis parameters that are listed in Table 5.6-1 and Section 9 as contaminants of concern that are not listed in the follow-up study: o Chemical oxygen demand (COD) o PAHs o Specific chlorophenolic compounds o Specific non-chlorinated phenolic compounds o Specific resin compounds, in addition to resin fatty acids o Chlorinated VOCs o Total petroleum hydrocarbons, and/or other relevant hydrocarbon parameters	Nova Scotia Environment – Water Management Unit	Refer to section 2.3 and 2.4 for comments concerning the physical and chemical characterization of NPNS' present raw wastewater and the proposed technology for treatment.
ETF Design Concerns	Without quantitative full characterization of the influent quality to identify potential contaminants of concern to be received by the ETF, there is insufficient information to assess the potential Project effects to receiving water systems and their associated VECs, and to support the subsequent selection of appropriate mitigation measures to address those effects.	Nova Scotia Environment – Water Management Unit	Refer to Section 2.3 and 2.4 for information associated with the chemical characterization of the influent, treated effluent for the proposed ETF and the receiving environment.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	The ETF design includes a spill basin with a design capacity of 35,000 m <sup>3</sup> to handle untreated effluent, which is predicted to handle 10 to 13 hours of full mill effluent diversion assuming an empty condition. The existing plant currently discharges into the Boat Harbour ETF, which would be expected to have substantially more storage capacity volume than the proposed spill basin for handling treatment system upsets. There is no discussion about the change in holding capacity within the proposed ETF compared to the existing process and what impacts to mill operations will be expected, and the robustness of the proposed design capacities in handling ETF system issues without inadvertently discharging into the environment.	Nova Scotia Environment – Water Management Unit	Refer to Section 3.4 for additional details related to the design of the spill basin and potential overflow.
ETF Design Concerns	As part of EMP and/or EPP for the operations phase, the management of the spill containment basin, and associated plant operations, including shutdown, should be discussed with respect to preventing basin overflows.	Nova Scotia Environment – Water Management Unit	Refer to Section 3.4 for additional details related to the design of the spill basin and potential overflow. Additional, information as required will be included in the appropriate EPPs.
ETF Design Concerns	DATA FROM LAB TRIALS ON NPNS RAW WASTEWATER AT SIMILAR FACILITIES NOR MODELLING OF NPNS RAW WASTEWATER PARAMETERS WERE NOT PROVIDED TO ASSESS THE EFFICACY OF THE PROPOSED TECHNOLOGY.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology).
ETF Design Concerns	The proposed treatment facility and accompanying receiving water study are based on an annual average flow rate of 62,000 m <sup>3</sup> /day and a maximum daily flow rate of 85,000 m <sup>3</sup> /day. No data has been provided to support the basis of the design.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Section 3.2 for a description of the basis of design, which is supported by three years of operational data.
ETF Design Concerns	Appendix C of the Registration Document states the average flow is 70,000 to 75,000 m <sup>3</sup> /day, not 62,000 m <sup>3</sup> /day.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Section 3.2 for a description of the flow range, which is supported by three years of operational data.
ETF Design Concerns	The EA submission does not provide an explanation of how flows will be reduced to achieve an annual average flow rate of 62,000 m <sup>3</sup> /day (a reduction of 8,000 to 13,000 m <sup>3</sup> /day by the data provided in the EARD).	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Section 3.2 for a description of how the flow rate will be reduced.
ETF Design Concerns	Please note any influent volumes to the new ETF or discharge from the proposed outfall pipe in excess of 85,000 m <sup>3</sup> /day would invalidate the ETF design and the receiving water study results.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	The daily flow rate is not anticipated to exceed 75,000 m <sup>3</sup> /d at the new ETF, making the 85,000 m <sup>3</sup> /d estimate a conservative assumption for the design and RWS. Refer to Section 3.2.
ETF Design Concerns	COMPLETE CHARACTERIZATION OF INFLUENT (AT POINT A) HAS NOT BEEN PROVIDED TO ASSESS THE APPROPRIATENESS OF THE PROPOSED TREATMENT TECHNOLOGY.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Sections 2.3 and 2.4 for characterization of the influent and effluent for the proposed ETF.
ETF Design Concerns	TREATMENT TECHNOLOGY Specifications WERE NOT PROVIDED TO ASSESS THE EFFICACY OF THE TECHNOLOGY	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Section 3.0 and 3.1.
ETF Design Concerns	Table 4.2-1 indicates MBBRs are sensitive to risk of loss of media and the technology has a limited degree of process automation. The EARD does not address how these highlighted drawbacks will be mitigated by NPNS. Please note, under-design of the system in terms of flows could increase the risk of media loss.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to section 3.2 for comments concerning effluent flow volumes.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	The temperatures indicated are above the range of optimum treatability, generally accepted to be between 25 to 35. oC The highest temperatures and highest flows will occur simultaneously during the summer months. What effect will these facts have on the ability of ETF to consistently meet and not exceed effluent limits?	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology).
ETF Design Concerns	The EARD indicates a retention time of 10-13 hours at a design capacity of 35,000 m3. The basis of this design has not been provided therefore there is insufficient information to assess the appropriateness of the design.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
ETF Design Concerns	If flows exceed 85,000m3 per day on a consistent basis (77 out of 92 days for 3 consecutive months in the summer where daily water use is >85,000 m3), there will not be sufficient recovery time in ETF to empty the basin before it is required.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
ETF Design Concerns	There is only a mention of a “the standard operating procedure will be to keep the spill basin nearly empty so the full volume is available when needed” the document does not discuss how this will be accomplished.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
ETF Design Concerns	Is there an overflow? If so, where will the overflow be directed?	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
ETF Design Concerns	The EARD proposes a spill basin for “excess process flows that are outside the tolerances of the ETF to handle”. Current, any spills of dangerous goods from within the Facility go directly to the settling basins at BHETF. NPNS is currently not in compliance with the Dangerous Goods Management Regulations as the BHETF is not Approved to accept and/or treat dangerous or waste dangerous goods. NPNS has indicated since 2015 that spill containment would have to be addressed when a new ETF is proposed. NPNS has not provided details on spill containment for dangerous goods in accordance with the Dangerous Goods Management Regulations nor does the EARD address treatment of dangerous or waste dangerous goods within the new ETF.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to section 3.6 for comments concerning potential releases of waste dangerous goods at the project site and where they will be directed for treatment.
ETF Design Concerns	The submission does not comment on the specific training and experience of the proposed operator. Due to the complexity of the system and the importance of precise operation in order to achieve regulatory compliance, the system should be operated by an individual with education and experience necessary to operate the new ETF such as an individual who has achieved minimum of a Level 4 Operator Certification. These qualifications should be demonstrated to the Department. This individual would also be in direct responsible charge of the operation of the ETF.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	An appropriately trained operator will operate this system. The qualifications of the operator will be demonstrated as part of the Industrial Approval application.
ETF Design Concerns	Pilot scale testing of treatment technology at the Facility on the actual effluent would provide confirmation that the technology can consistently achieve the effluent discharge concentrations outlined in the EARD.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology).
ETF Design Concerns	The EARD states the ETF will require several chemical inputs, which will be stored on site. The proposed location of the chemical storage area(s) should be identified.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to section 3.6 for comments concerning potential releases of waste dangerous goods at the project site and where they will be directed for treatment.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	There was no in-depth discussion or analysis of the use of physico-chemical processes as an option to provide treatment of the effluent.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' future raw wastewater, modeling results and laboratory trials.
ETF Design Concerns	The EARD Section 5.2.2.6 indicates the ANOXKALDNES BASTM system will reduce soluble COD by approximately 70% and the MBBR should be capable of removing approximately 40% of the easily biodegradable soluble COD. There is no data provided to support these assertions.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Addendum 2.0 for comments relating to data to support assertions that chemical oxygen demand (COD) can be reduced to the proposed limit.
ETF Design Concerns	Under the current IA (Condition 6(e)), NPNS must achieve a 50% reduction from the benchmark total COD concentration of 1900 mg/L on the influent to the ETF by January 31, 2020. This means the influent total COD to the new ETF must not exceed 950 mg/L.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Addendum 2.0 for comments relating to data to support assertions that chemical oxygen demand (COD) can be reduced to the proposed limit.
ETF Design Concerns	The EARD does not provide data on current influent COD fractionization (i.e. what portion of NPNS' influent at Point A is readily biodegradable, slowly biodegradable, soluble non-biodegradable and particulate non-biodegradable) in order to understand the treatment efficiency of the proposed ETF with respect to total COD. In the absence of this information, an assessment of the new ETF's ability to achieve compliance can not be completed.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology).
ETF Design Concerns	NPNS does not commit firmly to an installation date for O2 delignification. O2 delignification will significantly reduce colour and COD to the influent of the new ETF.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Additional information regarding the two stage Oxygen Delignification technology that will be incorporated into the pulp making process at NPNS is provided in Addendum 1.0 of the Focus Report.
ETF Design Concerns	Current mill effluent flow ranges from 70,000 to 75,000 cubic metres per day (m3/d). The report goes on to recommend a design flow for the plant of 85,000 m3/d. It is not indicated whether this is an average daily flow, peak daily flow, or peak instantaneous flow – typically it would be recommended values for all of these flow capacities be defined. It also provides no description as to how this capacity was selected (i.e. was any future growth taken into account, how were ongoing water reduction efforts factored in, etc.). Additional calculations should be provided to support the selection of this capacity.	Pictou Landing First Nation	Refer to section 3.2 for comments concerning effluent flow volumes.
ETF Design Concerns	There is only one treatment process train so that if/when a treatment component is down for servicing, the process is either shutdown or bypassed. This configuration seems to add a bit of risk for extended untreated bypass discharges. There should be multiple treatment trains.	Pictou Landing First Nation	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology).
ETF Design Concerns	The report discusses two options for modifications to the pulp making process that could reduce the downstream loading to the treatment system: extended delignification and oxygen delignification. The report rejects extended delignification outright but does not appear to reject oxygen delignification, however, nor does it specifically recommend it. If oxygen delignification is recommended, this needs to be clearly stated in the report as well as the impacts/benefits it might have on reduced loading to the downstream treatment system.	Pictou Landing First Nation	Refer to Addendum 1.0 for comments relating to O2 delignification.
ETF Design Concerns	The report goes on to briefly identify other technologies including several variations on the activated sludge process as well as anaerobic treatment. There is very little discussion other than a couple of bullets for each of these technologies with a bullet to state that conventional activated sludge process is the preferred technology. While EXP would not disagree that the final technology selection is potentially valid, this section would benefit from some significant discussion as to why these other technologies were rejected.	Pictou Landing First Nation	The treatment technology specifications and an assessment of the efficacy of the proposed treatment technology for the EFT is presented in details in Section 3.1 of the Focus Report.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	There is a final summary of potential tertiary treatment objectives and the recommendation is not to include tertiary treatment unless there is a very specific reason to do so. EXP would agree with this as a rule of thumb but the report does not provide enough information to independently draw conclusions as to whether tertiary treatment may be required in this case. Reasons could include specific contaminants that are untreatable by the activated sludge process or overly stringent discharge limits. With no summary of the contaminant concentrations or the effluent treatment objectives, it is difficult to comment on whether tertiary treatment might be required.	Pictou Landing First Nation	Will be addressed via formal consultations with PLFN and information exchanged with EXP.
ETF Design Concerns	The report would benefit from some basic process flow block diagrams to better illustrate the processes.	Pictou Landing First Nation	Process graphics are provided in the Focus Report Overview.
ETF Design Concerns	Very little data is presented from the existing plant operations. Some average flows and contaminant loadings are provided in charts per metric tonne of final product. EXP would recommend that a summary table be provided to clearly define the effluent flow rate and the relevant contaminant concentrations in mg/L or similar applicable units.	Pictou Landing First Nation	See section 3.2 for evaluation of effluent flow. Refer to section 4.2 for comments concerning the RWS.
ETF Design Concerns	The discharge limits or treatment objectives for the effluent treatment system are not given in the report. A summary of these limits should be provided.	Pictou Landing First Nation	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology).
ETF Design Concerns	One of the underlying comments that EXP noted is that it is suggested that any of the monitoring programs do not have to be completed for up to 24 months after commencement of discharge from the ETF. It would be expected that any discharge from the Plant would need to be tested prior to discharge into the environment. If this is going to be conducted, it was not discussed in this document.	Pictou Landing First Nation	As required under PPER, the effluent will be tested subsequent to treatment and prior to entering the discharge pipe to the environment.
ETF Design Concerns	While the EARD suggests that tertiary treatment was considered, no detailed analysis is provided as to why these tertiary treatment options were ruled out.	Pictou Landing First Nation	Addressed via formal consultations and future discussions with PLFN and EXP
Flora/Floral Priority Species	Table E.1.1-1 lists all project-related residual environmental effects as NS, no significant residual environmental effects predicted. However, some key surveys for terrestrial plants and marine biota have not been completed. It is recommended that this table be revised once these surveys have been completed and the proponent can assess the residual environmental effects on the terrestrial plants and marine biota that are present in the study area.	Nova Scotia Department of Communities, Culture and Heritage	As requested, plant baseline surveys were completed along the proposed re-aligned effluent pipeline route. Results of these surveys are described in Section 8.1 of the Focus Report.
Flora/Floral Priority Species	Table 3.1-1 the federal Species at Risk Act should be included in this table. Until the additional botanical surveys are completed it is unknown if a species protected under SARA is present in the study area.	Nova Scotia Department of Communities, Culture and Heritage	Plants listed under the federal Species at Risk Act (SARA) were included as Priority Plants as described in Section 8.1 of the Focus Report and additional botanical surveys were completed.
Flora/Floral Priority Species	Section 8.7.2.4 notes that "The overstory (trees) within the wetland was dominated by white pine ( <i>Picea glauca</i> ) and American mountain-ash ( <i>Sorbus americana</i> ); as well, the overstory also consisted of red maple ( <i>Acer rubrum</i> ). The shrub layer was dominated by broadleaf cattail ( <i>Typha latifolia</i> ) and also contained field horsetail ( <i>Equisetum arvense</i> ), woolgrass ( <i>Scirpus cyperinus</i> ), cinnamon fern ( <i>Osmunda cinnamomea</i> ), sweet pea ( <i>Lathyrus</i> sp.), Valerian ( <i>Valeriana officinafis</i> ), and common marsh bedstraw ( <i>Galium palustre</i> )." Please note there are several errors of the Latin species names. The Latin name for eastern white pine is <i>Pinus strobus</i> . <i>Picea glauca</i> is the Latin name for white spruce. The currently accepted Latin name for cinnamon fern is <i>Osmundastrum cinnamomeum</i> (L.) C. Presl. It is unlikely that the canopy found in a natural swamp is white pine or white spruce. It is recommended that this be clarified through subsequent plant surveys. It is recommended that the proponent refer to and cite the Canadian Wetland Classification system in these descriptions (National Wetlands Working Group 1997)	Nova Scotia Department of Communities, Culture and Heritage	As recommended, wetland surveys for the re-aligned pipeline route were completed. The results of those surveys are presented in Section 5.1 of the Focus Report.  Latin names for plants identified during plant surveys are based on AC CDC listings.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Flora/Floral Priority Species	Section 8.8.2.2 states that Jelly lichen ( <i>Col/lex tenax</i> ) "are typically calciphiles however salt from the ocean would increase the pH of coastal soils allowing them to thrive." Increases in pH due to excessive sodium are not the same as a calcium-rich habitat for plants. The reference that supports this statement should be cited.	Nova Scotia Department of Communities, Culture and Heritage	Jelly lichen were not identified in the 2019 footprint as surveyed in 2019.
Flora/Floral Priority Species	The plant species list in Appendix P should include the subspecific designations where possible. E.g., <i>Phragmites australis</i> : one subspecies is an exotic invasive, while the other is not. Exotic & invasive species should be controlled, where possible, to prevent spread into surrounding habitats.	Nova Scotia Department of Communities, Culture and Heritage	Phragmites were not observed in follow-up plant surveys in 2019.
Freshwater Fish and Fish Habitat	The Project description also identified and provided a thorough preliminary assessment of nine freshwater watercourses, and 11 wetlands that provide fish habitat. It should be noted that any watercourse or wetland alteration from pipeline installation works would be subject to regulatory review by DFO, under Section 35 of the FA. Therefore, DFO would require, for each watercourse or wetland alteration application, site specific information, including but not limited to, pipeline methodologies and timelines for any pipe installation. Additionally, a detailed fish habitat assessment, conducted by a certified habitat assessment specialist, would be required.	Fisheries and Oceans Canada	A fish habitat baseline survey was completed in freshwater watercourses that cross the project area to identify environments that could provide suitable fish habitat. Baseline fish surveys were subsequently completed to supplement the fish habitat survey. The results of these surveys are provided in Section 7.1 of the Focus Report. Where required (i.e., where alteration to a potentially fish-bearing watercourse or wetland is necessary), authorization will first be obtained under Section 35(2) of the Fisheries Act.
freshwater Fish and Fish Habitat	Under Section 8.6, Table 8.6.1: The proponent describes brook trout as S3, Uncommon in the province, however this species is very common in the province, including in area assessed in this document, and the primary species targeted for freshwater sport fishing.	Nova Scotia Department of Fisheries and Aquaculture	While brook trout may be locally abundant in watercourses within the vicinity of the project, the Atlantic Canada Conservation Data Centre has assigned a rank of S3 to this species as it may be vulnerable or uncommon at a provincial level. Additional information on the freshwater fish and fish habitat surveys is provided in Section 7.1 of the Focus Report.
Freshwater Fish and Fish Habitat	The follow-up monitoring program proposed field verification of fish habitat within watercourses in the vicinity of the Project footprint, which would be conducted prior to the Construction phase.	Nova Scotia Environment – Water Management Unit	A fish habitat baseline survey was completed in freshwater watercourses that cross the project area to identify environments that could provide suitable fish habitat. Baseline fish surveys were subsequently completed to supplement the fish habitat survey. The results of these surveys are provided in Section 7.1 of the Focus Report.
Freshwater Fish and Fish Habitat	The Registration Document proposed field verification of fish habitat within watercourses in the vicinity of the Project footprint, prior to the Construction phase, which should be conducted.	Nova Scotia Environment – Water Management Unit	A fish habitat baseline survey was completed in freshwater watercourses that cross the project area to identify environments that could provide suitable fish habitat. Baseline fish surveys were subsequently completed to supplement the fish habitat survey. The results of these surveys are provided in Section 7.1 of the Focus Report.
Groundwater	Consider conducting baseline chemistry analyses of any nearby potable groundwater wells in order to have a sufficient understanding of current groundwater quality. In the event of a pipeline break/leak, future samples can then be compared with these baseline concentrations in order to determine whether there has been an impact on local drinking water quality.	Health Canada	Additional information on the measures to reduce or avoid the risk of contaminating potable water supplies, as well as the proposed methods to monitor for any potential effects are provided in Section 5.2 of the Focus Report.
Groundwater	Departmental staff in their review have found nothing of particular concern within our Department's area of mandate. Still, we highlight the Statement of Provincial Interest Regarding Drinking Water, and assume that adequate consideration is being given to the Town of Pictou's water supply, since the proposed effluent pipeline crosses the source water area for that supply.	Nova Scotia Department of Municipal Affairs	Refer to sections 3.5 & 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
Groundwater	Considering the potential for effluent to impact drinking water (related to a pipeline leak and contamination of groundwater) and the receiving environment, a greater understanding of the type, nature and concentration of environmental contaminants present in effluent, and their potential impacts on groundwater and the receiving environment is warranted.	Nova Scotia Environment – Environmental Health Unit	Additional information on the measures to reduce or avoid the risk of contaminating potable water supplies, as well as the proposed methods to monitor for any potential effects are provided in Section 5.2 of the Focus Report.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Groundwater	The potential impact to potable water supplies if a release occurs from the pipeline is a significant concern.	Nova Scotia Environment - Resource Management Unit	Additional information on the measures to reduce or avoid the risk of contaminating potable water supplies, as well as the proposed methods to monitor for any potential effects are provided in Section 5.2 of the Focus Report.
Groundwater	Limited information has been provided at this stage to ensure that operational activities in and around the spill basin will not adversely affect the environment. The proponent has indicated that the existing NPNS groundwater monitoring network will be updated as required once the construction is complete; however, proposed changes have not been identified at this time.	Nova Scotia Environment - Resource Management Unit	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
Groundwater	Dewatering activities as part of below grade excavations for the pipeline installation are discussed in general terms within Section 5.3.1.7. There is no mention of whether expected dewatering rates and pumping periods for the project will be assessed with respect to the 'Application Requirements for Water Withdrawal Approvals'. These dewatering activities may trigger the need for the Project to obtain an NSE Water Withdrawal Approval or Approvals.	Nova Scotia Environment – Water Management Unit	Potential water withdrawal permit has been included in the mitigation associated with trench dewatering and watercourse crossings. See Focus Report Appendix 0.
Groundwater	An assessment should be conducted on where flows resulting from a pipeline leak would go with the use of a low permeability liner within certain sections of the pipeline trench during the Operations phase. This assessment should include determining whether flows would be diverted into specific local surface water features. If impacts are determined appropriate mitigation measures should be developed.	Nova Scotia Environment – Water Management Unit	Additional information on the measures to reduce or avoid the risk of an effluent leak, as well as the proposed methods to monitor for any potential effects are provided in Section 5.2 of the Focus Report.
Groundwater	The treated effluent will likely contain natural chemicals found in the wood chips, added chemicals from processing and the effects of treatment which can reduce, create or alter chemicals. The chemical characterization is important from a groundwater and drinking water perspective, primarily with regards to the potential for any leaks, spills or other releases that are uncontrolled and enter groundwater or surface waters. Characterization is beneficial in order to plan potential monitoring and mitigation strategies.	Nova Scotia Environment – Water Management Unit	Additional information on the treated effluent characterization is provided in Section 2.4 of the Focus Report. Additional information on the measures to reduce or avoid the risk of contaminating potable water supplies, as well as the proposed methods to monitor for any potential effects are provided in Section 5.2 of the Focus Report.
Groundwater	The above lists of potential COPCs include a variety of metal and chemical parameters that are of potential concern if accidentally released into groundwater or surface water. The potential COPCs from a groundwater, surface water and drinking water quality perspective need to be considered separately from those determined important for the receiving ocean environment.	Nova Scotia Environment – Water Management Unit	Additional information on the measures to reduce or avoid the risk of contaminating potable water supplies, as well as the proposed methods to monitor for any potential effects are provided in Section 5.2 of the Focus Report.
Groundwater	Details of the ETF groundwater monitoring program are not fully provided in the registration document (Figure 8.4-1 page 173 does show the existing monitoring well locations and page 194 summarizes some of the results). However, as new facilities are to be constructed on the Northern Pulp site (including clarifiers, aeration basin and effluent spill basin) the monitoring network plan needs to be revised to include these new activities and locations. Groundwater monitoring needs to provide adequate testing to ensure any operational issues are identified and addressed before they become a significant risk to the environment.	Nova Scotia Environment – Water Management Unit	Refer to Sections 3.5 and 5.2, the existing network of monitoring wells associated with the NPNS monitoring program has been and will continue to be used to monitor groundwater (elevations and quality) at the NPNS property before and after the ETF is constructed.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Groundwater	Monitoring design plans for detecting potential spills/leaks resulting from accidental damage to, or malfunctions of the pipeline should be prepared with methodologies for further evaluation. Plans should include more details on methods to be used for monitoring for pressure drops/leaks. In addition, plans should address monitoring immediately adjacent to the pipeline where the pipeline is installed in areas of significant risk including: below the water table, in significant wetlands, in areas of watercourse crossings and in the two areas where the pipeline route crosses the Source Water Protection Delineated Boundary for the Town of Pictou Wellfields. The proponent should evaluate and present the use of pressure monitoring systems and shallow groundwater monitoring wells among other potential options.	Nova Scotia Environment – Water Management Unit	Additional information on the measures to reduce or avoid the risk of contaminating potable water supplies, as well as the proposed methods to monitor for any potential effects are provided in Section 5.2 of the Focus Report.
Groundwater	Risk mitigation measures need to be more completely described for further evaluation regarding design to prevent/contain spills/leaks from pipeline accidental damage or malfunction, particularly in areas of significant risk. Description should be made of the practical operational efficacy of measures such as the trench lining proposed, as well as the potential need/benefits of secondary containment of the pipeline in areas of significant risk.	Nova Scotia Environment – Water Management Unit	Refer to section 3.5 & 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
Groundwater	Although the project does not anticipate involving blasting during construction (page 201), should any blasting be necessary, water wells in the vicinity of blast locations should be included in pre-blast surveys for the ability to determine potential effects to groundwater quantity and quality (see document page 95).	Nova Scotia Environment – Water Management Unit	Refer to section 2.5 for comments concerning proposed changes to the pipeline construction methodology and other associated pipeline work, related to the potential changes to the marine portion of the pipeline route. Based on the additional information provided in Section 2.5 of the Focus Report, the requirement for blasting is considered highly unlikely.
Groundwater	Field-truthing and locational mapping of water wells within 500 metres radius of the proposed activities (i.e., 500 m from each side of the centreline of the pipeline route, or from the ETF site boundaries) should be conducted prior to construction.	Nova Scotia Environment – Water Management Unit	Refer to Sections 3.5 and 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills. Consultation with NSE will take place prior to construction activities.
Groundwater	Pre-Construction Water Well Surveys should be conducted within 500 metres radius of the proposed activities (i.e., 500 m from each side of the centreline of the pipeline route, or from the ETF site boundaries). These surveys should include both monitoring for drinking water quality parameters and well water levels and be conducted prior to any construction activities. Methodologies and monitoring proposed for the water well survey should be submitted to NSE for approval prior to implementation.	Nova Scotia Environment – Water Management Unit	Refer to Sections 3.5 and 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills. Consultation with NSE will take place prior to construction activities.
Groundwater	Groundwater monitoring plans in the ETF area will need to be enhanced to include the new activities proposed. This includes additional monitoring to include the area with the proposed new clarifiers, aeration basin and effluent spill basin. The effluent spill basin is proposed to be HDPE lined and this should incorporate leak detection monitoring. The ETF area monitoring plans should be reviewed and approved by NSE.	Nova Scotia Environment – Water Management Unit	Refer to Sections 3.5 and 5.2, the existing network of monitoring wells associated with the NPNS monitoring program has been and will continue to be used to monitor groundwater (elevations and quality) at the NPNS property before and after the ETF is constructed.
Groundwater	More details on the potential Chemicals of Potential Concern (COPCs) from a groundwater, surface water and drinking water quality perspective need to be provided and evaluated by the proponent in order that their contingency plans for monitoring and mitigation can appropriately include these parameters. Details should include a final list of COPCs and their range of concentrations expected both in untreated influent and treated effluent that could be released accidentally into the environment at the ETF site, or along the pipeline route.	Nova Scotia Environment – Water Management Unit	Refer to Sections 2.3 and 2.4 for discussion on the influent and effluent water characteristics. Refer to Sections 3.5 and 5.2, the existing network of monitoring wells associated with the NPNS monitoring program has been and will continue to be used to monitor groundwater (elevations and quality) at the NPNS property before and after the ETF is constructed.
Groundwater	Consideration should also be made for including specific measures in Northern Pulp's Environmental Response and Contingency Plan (page 97) that relate to contingencies that potentially involve the Town of Pictou Source Water Protection Plan, SWPA (Source Water Protection Area) and the Town of Pictou water supply wellfields.	Nova Scotia Environment – Water Management Unit	Refer to sections 3.5 & 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Groundwater	Section 8.5.3.2 proposes lining the trench within the Town of Pictou source water protection area with an impermeable or low conductivity material/liner. No details are provided as to what type of liner would be considered 'impermeable' and where flows from a leak would potentially go and their potential impacts with reduced vertical infiltration. Understanding how leak flows will be managed within these lined pipeline trench sections would assist with evaluating impacts to various VECs, including surface water resources, and development of appropriate mitigation measures (if required).	Nova Scotia Environment – Water Management Unit	Refer to Section 3.5 for information associated with pipeline leak detection and protection.
Groundwater	Trench lining as secondary containment could divert shallow groundwater and change flow regimes. This would be of greater concern within the Town of Pictou Watershed.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Sections 3.5 and 5.2 for comments concerning pipeline leak detection and enhanced pipeline protection options. Trench lining is not currently part of the project.
Groundwater	Insufficient information was provided in the EAR regarding the proponent’s plan for monitoring and mitigating potential leaks along the pipeline route. Detailed plans regarding monitoring and mitigation measures for the prevention/containment of potential pipeline leaks should be provided for further evaluation. This is particularly important in sensitive areas, such as the Town of Pictou’s Source Water Protection Area and areas in proximity to private water supply wells, watercourses, and wetlands.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to sections 3.5 & 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
Groundwater	Viable options for leak detection technologies and inspection methodologies should be provided.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to sections 3.5 & 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
Groundwater	The proposed pipeline location passes through the Town of Pictou watershed. The aquifer serving the Town is a shallow, sand and gravel aquifer. It is unclear in the EARD if NPNS consulted directly with the Town on potential concerns and mitigation measures.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to sections 3.5 & 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills. Multiple discussions were held with the Town of Pictou on this topic and discussions will continue prior to construction activities.
Groundwater	There is an existing groundwater and surface water monitoring program at the mill site, which would have to be modified to accommodate the proposed project. Changes to the current monitoring locations, parameters, and frequency would be based on the proposed new infrastructure, such as the spill basin, clarifiers, and chemical storage, and effluent quality. Additional baseline data would also have to be collected.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Will be addressed in a future IA and in consultation with NSE.
Groundwater	The EARD suggests pre- and post-construction groundwater monitoring along the pipeline route to ensure no alterations to groundwater from the construction process. Details of this proposed monitoring program were not provided, and the EARD did not discuss the potential for impacts to groundwater associated with the operation of the pipeline.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Sections 3.5 and 5.2, the existing network of monitoring wells associated with the NPNS monitoring program has been and will continue to be used to monitor groundwater (elevations and quality) at the NPNS property before and after the ETF is constructed.
Groundwater	There is an existing groundwater and surface water monitoring program at the mill site, which would have to be modified to accommodate the proposed project. Changes to the current monitoring locations, parameters, and frequency would be based on the proposed new infrastructure, such as the spill basin, clarifiers, and chemical storage, and effluent quality. Additional baseline data would also have to be collected.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Sections 3.5 and 5.2, the existing network of monitoring wells associated with the NPNS monitoring program has been and will continue to be used to monitor groundwater (elevations and quality) at the NPNS property before and after the ETF is constructed.
Groundwater	Submarine Groundwater Discharge (SGDs) are becoming more important worldwide in understanding the interaction between fresh terrestrial and saline marine waters. Freshwater Submarine springs can be critical in supporting local, diverse biological communities on the seafloor. There is no discussion on whether such ecosystems are present at the diffuser site locations.	Pictou Landing First Nation	Potential for groundwater springs will be a consideration in the design of the land/marine pipe interface. A baseline marine habitat assessment was undertaken as noted in Focus Report Section 4.1



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Groundwater	Follow Up work on the Pipeline Preliminary Assessment completed in Fall 2018. Discussions should be held with the Town of Pictou to assess potential impacts of pipeline routing as it passes through their wellhead protection areas. Formal discussions with the Town of Pictou should be undertaken to ensure proper mitigative methods are employed for this section of pipeline that is acceptable to the Town of Pictou.	Pictou Landing First Nation	NPNS will continue to hold discussions with the Town of Pictou.
Groundwater	Follow Up work on the Pipeline Preliminary Assessment completed in Fall 2018. In field inspections for nearby potable water wells	Pictou Landing First Nation	The groundwater monitoring program will be developed in for the Industrial Approval in consultation with NSE.
Groundwater	The plan creates additional risk to the Town water supply by the on-land portion of the proposed transmission pipe carrying treated effluent to Caribou Harbour. It is the Town's position that we can not be supportive of any activity that would add additional risk to our water supply regardless of the many references to 'insignificant' risk in the Environmental Registration Document. More specifically, we cannot support the planned construction of a pipe carrying the treated effluent containing 'residual contaminants' (Registration Document, Pg. 32) along TCH 106. In the original Source Water Protection Program from 2005 the hydrologist representing ADI limited identified a 'Zone of Influence' which shows the extent of the sand and gravel aquifer where surface water could affect the Town water supply (Appendix A, Pg. 4). A large stretch of TCH 106 is situated well within the aquifer and, therefore, we should assume that any accidental spills in the area could be harmful to our citizens.	Town of Pictou	Refer to sections 3.5 & 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
Groundwater	Recognizing that water is a Provincially regulated resource the contents of the treated effluent and the security of the transmission system must be adequately addressed within the scientific studies to ensure safety of our water supply.	Town of Pictou	Refer to sections 3.5 & 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
Groundwater	Also, should any unintended blockages of the pipe occur beyond that point, it could be concluded that the vent would provide a release point for effluent until the flow is stopped. It is important to note that his point is within the Town limits and is above the Pictou Wellfield.	Town of Pictou	Refer to Sections 3.5.1 and 3.5.2 for additional information associated with leak detection and protection.
Harbour Physical Environment, Water Quality and Sediment Quality	This section summarises the predicted residual effects on the physical environment of Caribou Harbour (sediment and water quality) despite the absence of baseline information on water and sediment quality in the assessment area.	Environment and Climate Change Canada	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	it is strongly recommended that the proponent take that opportunity to characterize the sediment in a manner that meets ECC's requirements for a Disposal at Sea permit application.	Environment and Climate Change Canada	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	Mixing Zone as defined in the report glossary in the context of this project, refers to the marine area within a 100 m distance from the termination of the effluent pipeline (page xxviii). However, several of the effluent plume figures refer to a "regulatory mixing zone." There is no federal regulatory mixing zone, however effluent concentration at fixed distances from discharge are relevant to determining EEM requirements. Clarification on what is intended by the term "regulatory mixing zone", and what regulations might be referred to here is needed.	Environment and Climate Change Canada	Refer to Addendum 3.0 for a response to questions and comments on the receiving water study (not already outlined in this document).

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	It is stated: "Pictou Harbour is used as a proxy for Caribou Harbour with respect to water quality, in the absence of available water quality data for Caribou Harbour. Pictou Harbour is similar to Caribou Harbour in terms of depth and geography, but likely has greater freshwater influence." Without empirical baseline data from the actual discharge location, it is not possible to assess such statements or to evaluate the potential environmental impacts of the effluent discharge.	Environment and Climate Change Canada	The updated RWS is presented in Section 4.2.
Harbour Physical Environment, Water Quality and Sediment Quality	No information has been provided with respect to the physical and chemical characteristics of the sediments to be excavated to install the pipeline.	Environment and Climate Change Canada	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	It should be explained how the initial mixing and dispersal of the plume was taken into account when simulating Far-Field extent and concentrations of effluent in Section 3.	Environment and Climate Change Canada	Refer to Addendum 3.0 for a response to questions and comments on the receiving water study (not already outlined in this document).
Harbour Physical Environment, Water Quality and Sediment Quality	Appendix E1, Table 2.1. The table identifies the simulation time step as 60 seconds. Is this correct? An explanation on the step interval used for the plume simulation should be provided.	Environment and Climate Change Canada	Refer to Addendum 3.0 for a response to questions and comments on the receiving water study (not already outlined in this document).
Harbour Physical Environment, Water Quality and Sediment Quality	The explanatory details provided on far-field simulations are very brief and do not permit a full appreciation of the model's robustness or the credibility of its results.	Environment and Climate Change Canada	The updated RWS is presented in Section 4.2.
Harbour Physical Environment, Water Quality and Sediment Quality	Figure 2.13 shows the final state of the plume at the end of one month, more than 9 days after the tidal phase depicted by the preceding Figure 2.12. It is not specified whether any of these figures depict the maximum extent of the simulated plume, nor how isolated effluent patches form, nor why the final plume at the end of the month is further south-east than any of the preceding snapshots provided.	Environment and Climate Change Canada	The updated RWS is presented in Section 4.2.
Harbour Physical Environment, Water Quality and Sediment Quality	The maximum extent of the modelled plume should have been provided, if it is not depicted in one of the figures.	Environment and Climate Change Canada	The modelling extended beyond the edge of the mixing zone. 2D and 3D modeling methodology is identified in Section 4.2.
Harbour Physical Environment, Water Quality and Sediment Quality	The report indicates that higher background level of contaminants from the Pictou area or the Strait were used as input parameters for background water quality, (due to a lack of data from the Caribou area), and as such can be considered more conservative. This may not be accurate: the Caribou Harbour area is expected to be less contaminated than Pictou Harbour, such that the effluent being discharged near Caribou would in reality be more concentrated relative to receiving water than what is suggested by the simulation based on Pictou baseline data. In other words, it would require greater dilution than estimated based on Pictou data to achieve a return to the levels theoretically prevailing in the Caribou area. To use an example from page 24, where TN is taken to be 0.24 mg/L (as in Pictou Road), a 1:25 dilution of effluent is needed to return TN levels to "background". But if TN in Caribou area were, say, 0.1 mg/L, then a 1:60 dilution would be required to return TN concentrations to ambient levels. The dilution ratios and distances required to achieve background levels for most other water-quality parameters may also be underestimated on page 24-25.	Environment and Climate Change Canada	The updated RWS is presented in Section 4.2.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	The table presents some water-quality parameters used as background conditions for Caribou Harbour. The title of the table should have identified the source of the samples as being from Pictou rather than Caribou area. As well, the depth in the water column at which samples were collected to obtain these averages was not provided.	Environment and Climate Change Canada	The updated RWS is presented in Section 4.2.
Harbour Physical Environment, Water Quality and Sediment Quality	Current directions should have been provided to aid in the visualization of prevailing currents. A rationale for the use of depth-averaged currents instead of near-bottom currents when simulating effluent mixing and entrainment at the diffuser should also be presented.	Environment and Climate Change Canada	The updated RWS is presented in Section 4.2.
Harbour Physical Environment, Water Quality and Sediment Quality	The dilution ratio required (1:7) to return salinity to ambient levels appears to be underestimated, as ambient salinity is being reduced, not increased, by mixing with freshwater effluent. The correct dilution and distance estimates for the return to ambient salinity should be provided. A discussion on how the adjustments affect all conclusions based on dilution throughout the EA registration document should also be provided.	Environment and Climate Change Canada	The updated RWS is presented in Section 4.2.
Harbour Physical Environment, Water Quality and Sediment Quality	The absence of substantive baseline information specific to the Caribou area of the Strait is a significant gap in the EA that makes evaluating potential environmental effects of the project difficult as well as developing a representative monitoring program.	Environment and Climate Change Canada	Baseline studies are provided in Sections 4.0, 5.0, 7.0 and 8.0.
Harbour Physical Environment, Water Quality and Sediment Quality	At this time, the Project description is not sufficient to completely characterize the potential effects related to Section 35 of the FA. Additional information is required to sufficiently address the following information gaps: the disposal at sea location; the underwater marine benthic habitat survey; the detailed wetland and watercourse crossing information; and, the final pipeline construction methodology.	Fisheries and Oceans Canada	Refer to Section 4.1 for the results of the baseline marine studies.
Harbour Physical Environment, Water Quality and Sediment Quality	Since the composition of the future effluent is currently unknown, it is unclear how this conclusion (i.e. that chemicals would diffuse within 2 m of the diffuser) could be reached. Health Canada requests additional information be provided to substantiate this statement given the diversity of chemicals likely to be present in the final effluent to be discharged and the lack of characterization as presented in the EA.	Health Canada	Additional information on the effluent characterization is provided in Section 3.3 of the Focus Report. Additional information about the receiving water study effluent loading are also provided in Section 2.4 of the Focus Report
Harbour Physical Environment, Water Quality and Sediment Quality	Clarity on whether there are contingencies in place to mitigate potential large and rapid fluctuations in water temperature at the diffuser location during low production or maintenance shutdown periods would be helpful.	Nova Scotia Department of Fisheries and Aquaculture	Additional information on contingency measures for the treated effluent temperature is provided in Section 7.5 of the Focus Report.
Harbour Physical Environment, Water Quality and Sediment Quality	The potential indirect risks to coastal wetlands associated with a marine effluent discharge is possible in the event of a major malfunction of treatment facility. While evaluation of treatment objectives and receiving water body characteristics (i.e. currents, tides, fate of contaminants in marine environments) are beyond current staff expertise, it is the understanding that modelling of the discharge plume has been completed. Evaluation of the modelling and proposed treatment objectives should be conducted to ensure sufficient protection is afforded and treatment objectives are achievable based on the proposed treatment processes and any other requirements for discharges of pulp mill effluents into marine waters.	Nova Scotia Environment - Protected Areas and Ecosystems Unit	Refer to section 3.3 & 4.2 for comments concerning effluent discharge parameters.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	Identification and evaluation of coastal wetlands habitats that may be impacted as a result of effluent discharge has not been provided in the registration document and were not included within the study area presumably based on the results of the discharge plume modelling conducted. Identification of these features, and other coastal habitat (beaches, estuaries, etc.), could be required if deficiencies within the modelling and treatment capabilities are identified in subsequent review of these components of the registration document.	Nova Scotia Environment - Protected Areas and Ecosystems Unit	Refer to Section 4.2 for the results of the updated RWS.
Harbour Physical Environment, Water Quality and Sediment Quality	Table 5.6-1 lists the anticipated daily maximum water quality of the treated effluent to be discharged by the Project and its associated concentrations, which are assessed in the discharge receiving water study (Appendices E1 to E3). The table does not identify whether it is a comprehensive list of potential contaminants of concern.	Nova Scotia Environment – Water Management Unit	Refer to Section 2.3 and 2.4 for discussion of the modelling results of the proposed ETF and the anticipated effluent quality.
Harbour Physical Environment, Water Quality and Sediment Quality	The discussions reference potential sources of quantitative data, but no reasoning is provided as to why this data is not provided in the Registration Document to support the contaminants of concern assessment. A detailed quantitative approach to estimate discharge contaminants of concern concentrations and loads from a treatment system, using a variety of information sources (e.g., literature review, background water quality and similar facility effluent data) would typically be expected as part of an EA Registration Document.	Nova Scotia Environment – Water Management Unit	Refer to Section 2.3 and 2.4 for discussion of the modelling results of the proposed ETF and the anticipated effluent quality.
Harbour Physical Environment, Water Quality and Sediment Quality	The effluent water quality listed in Table 5.6-1 and subsequently evaluated with respect to discharge into the marine receiving waters (Appendices E1 to E3) did not include metal compounds, hydrocarbons and several organic compounds listed in Section 9 as potential contaminants of concern. The Registration Document does not discuss why the contaminants of concern listed in Section 9 are not included in Table 5.6-1 and its associated detailed assessments.	Nova Scotia Environment – Water Management Unit	Refer to Section 2.3 and 2.4 for discussion of the modelling results of the proposed ETF and the anticipated effluent quality.
Harbour Physical Environment, Water Quality and Sediment Quality	No discussion was provided in the Registration Document about whether follow-up monitoring and assessment at Caribou Point would be used to confirm the input parameter assumption.	Nova Scotia Environment – Water Management Unit	Refer to section 7.4 for comments concerning the Environmental Effects Monitoring (EEM) Program.
Harbour Physical Environment, Water Quality and Sediment Quality	The Appendix E1 receiving water study presents in Figures 3.4 and 3.5 predicted plume dimensions in plan and side views. Two temperature scenarios are discussed prior to these Figures, which are for the winter and summer seasons. No indication is provided as to which seasonal temperature scenario is presented in the Figures. It would be expected that the plume dimensions may be different given the temperature differentiation between the effluent and ambient water for the two seasons. This information would support the effects assessment for the marine environment associated VECs.	Nova Scotia Environment – Water Management Unit	The updated RWS is presented in Section 4.2.
Harbour Physical Environment, Water Quality and Sediment Quality	Three sites are proposed to be sampled along the pipeline route without discussion and/or supporting references as to whether that is a sufficient sampling density for the proposed length of marine pipeline. No sampling is proposed within the discharge plume area. There is no discussion of reportable detection limits for the associated laboratory analysis of the parameters, and applicable federal/provincial criteria for results assessment.	Nova Scotia Environment – Water Management Unit	Refer to section 4.0 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	The mixing zone dilution ratio in Appendix E.1 for the CH-B site with a three-port diffuser is stated as 144 times at 100 m from the discharge point, while the HHE listed the dilution ratio as 168 times at 100 m from the discharge. There is a discrepancy between the two dilution ratios used in the Registration Document.	Nova Scotia Environment – Water Management Unit	Refer to Section 4.2 for additional information associated with the RWS.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	Baseline marine water quality sample results within the discharge receiving area near Caribou Point should be compared against the Pictou Road Area water quality results, which were used as inputs in the receiving water study (Appendix E1 & E3). The receiving water study models should be updated, and results re-evaluated if the Caribou Point results represent a more conservative receiving water condition than the Pictou site.	Nova Scotia Environment – Water Management Unit	Refer to Section 4.2 for additional information associated with the RWS.
Harbour Physical Environment, Water Quality and Sediment Quality	IT IS NOT CLEAR THAT THE SALINITY AND TEMPERATURE DIFFERENTIAL OF THE EFFLUENT HAS BEEN ACCOUNTED FOR IN THE MODELING. • Regardless of allowable dimensions for mixing zones indicated by CCME, effluent plumes shall not create changes to aesthetics or use at the water's surface. The study indicates color will reach background and not be visible at surface. When buoyancy differences are greater in winter, it results in a faster rising plume. Has this been accounted for?	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Section 4.2, for the results of the RWS.
Harbour Physical Environment, Water Quality and Sediment Quality	A 1-port and 3-port diffuser were modeled. The modeling indicates the plume will touch the seabed at 200 m and 10 m respectively. This is a large difference. Was a 2-port diffuser modeled? If so, at what distance does the plume interact with the seabed and what are the dilution factors?	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Section 4.2, for the results of the RWS.
Harbour Physical Environment, Water Quality and Sediment Quality	Insufficient information has been provided in the EARD to determine if the proposed discharge location is acceptable. Marine geotechnical surveys are required to determine the exact scour range the pipeline needs to be protected against.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	MITIGATION MEASURES FOR THE PROTECTION OF AQUATIC LIFE NEAR THE DIFFUSERS SHOULD BE REQUIRED. • Temperatures could be as high as 37 oC (summer) and 25 oC above background (winter).	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Addendum 3.0 for a response to questions and comments on the receiving water study (not already outlined in this document).
Harbour Physical Environment, Water Quality and Sediment Quality	Comparison of the actual effluent plume travel from Point D into Pictou Road (actual data collected under current seasonal conditions) with the EARD proposed discharge location would have been useful for the public to compare current conditions with anticipated conditions from the new proposed discharge location.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Section 4.2, for the results of the RWS.
Harbour Physical Environment, Water Quality and Sediment Quality	2017 and 2018 data reported for Pt. C indicates 9% and 13.7% of TSS samples had concentrations greater than 48 mg/L (33 of 365 for 2017; 50 of 365 for 2018) and 5% and 9.6% of BOD samples were greater than 48 mg/L (8 of 156 for 2017; 15 of 156 for 2018). Data also indicates 2017 and 2018 discharges into the Northumberland Strait at Pt. D were all below 48 mg/L with the exception of two TSS samples.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	The receiving water study undertaken for the Pictou Road discharge location proposed a daily maximum total nitrogen concentration of 3.0 mg/L. The revised receiving water study included in the EARD indicates a daily maximum of 6.0 mg/L. No explanation has been provided with respect to increase in total nitrogen.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Section 3.2 for additional information with respect to the indicated changes.
Harbour Physical Environment, Water Quality and Sediment Quality	BASELINE DATA USED FOR THE UPDATED RECEIVING WATER STUDY DOES NOT REFLECT THE NEW LOCATION. BASELINE WATER QUALITY STUDIES ALONG WITH ADJUSTMENT TO THE MODEL ARE REQUIRED.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Section 4.2 for information related to the Receiving Water Study.
Harbour Physical Environment, Water Quality and Sediment Quality	There is insufficient information and data provided to assess if temperature and salinity differential will have an effect on the visibility of the effluent.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Addendum 3.0 for a response to questions and comments on the receiving water study (not already outlined in this document).

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	The environmental assessment registration document ("EARD") filed by Northern Pulp establishes that there are a number of studies that are missing, not complete or require additional data collection before a full assessment of the impacts of the Project on the environment can be undertaken. In short, baseline information is lacking. There is no doubt that the Project will lead to the discharge of known contaminants into the waters of the Northumberland Strait and that the adverse impacts of those substances are not fully understood at this time. The same is true of the impacts of burning sludge in the power boiler - this will certainly lead to the emission of contaminants into the air, but these too are not fully understood at this time. For the reasons that follow, the only approach that respects the significance of the risks to Pictou Landing First Nation Aboriginal and Treaty rights is a full environmental assessment report.	Pictou Landing First Nation	Refer to Section 4.3 for results of the receiving water study. Refer to section 6.1 for comments concerning potential air contaminants.
Harbour Physical Environment, Water Quality and Sediment Quality	The complexity of the Northumberland Strait makes it difficult to model and predict water movement: EARD, Appendix R, p. 11. In addition the effects of climate change and acidification further complicate the predictive value of any modelling: ibid. The Stantec Receiving Water Study was not supported by actual sampling and could be wrong: ibid, pp. 1-2.	Pictou Landing First Nation	Refer to Sections 4.2 and 4.3 for additional information.
Harbour Physical Environment, Water Quality and Sediment Quality	The current untreated effluent can be tested to determine which of these chemicals of concern are present in the untreated effluent and could therefore find their way into the treated effluent.	Pictou Landing First Nation	Refer to Sections 2.3 and 2.4.
Harbour Physical Environment, Water Quality and Sediment Quality	the PPER are under review and will likely change given that they have been in place since 1992. Further, the PPER only address a handful of parameters: EARD, Appendix E, p. 16. As noted above, there are many more chemicals of concern that are in the effluent.	Pictou Landing First Nation	Refer to Section 9.2.8. Refer to section 2.3 for comments concerning the physical and chemical characterization of NPNS' PRESENT raw wastewater and the proposed technology for treatment.
Harbour Physical Environment, Water Quality and Sediment Quality	Geotechnical Assessment along the land and underwater pipeline route.a. EXP notes that the sediments along the underwater pipe route should also be assessed for chemicals of concern which could include, at a minimum, metals, Polycyclic Aromatic Hydrocarbons (PAH) and Petroleum hydrocarbons (PHC). b. DFO may supply additional parameters to be analyzed once they review the application to dredge along the proposed route.c. The program should include assessment for the presence of unique habitats associated with submarine groundwater discharge sites.d. The Geotechnical assessment would be estimated to be completed within a two month window.	Pictou Landing First Nation	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour. Section 4.0 is also relevant.
Harbour Physical Environment, Water Quality and Sediment Quality	EXP is proposing that chemical analysis on the untreated effluent be conducted for the following parameters listed in Table 1 and Table 2 below. These parameters have been selected based on present existing guideline information pertaining to protection of drinking water, marine aquatic life and freshwater aquatic life. Table 1 shows the parameters that are regulated in Nova Scotia under the Contaminated Sites Regulations. See Page 294 in Northern-Pulp-Full-Comments-Submissions.pdf The parameters listed in Tables 1 and 2 are both available for analysis from two Canadian Association for Laboratory Accreditation (CALA) and Standards Council of Canada (SCC) accredited laboratories in HRM: Maxxam Analytics Inc. and Agat Laboratories. While it is obviously not possible to test what the effluent would be from the new treatment system, it is possible to have the untreated effluent tested for the parameters listed in Table 1 and Table 2 to assess what chemicals of concern could be added to the list for assessment under the HHRA.	Pictou Landing First Nation	Refer to section 2.3 for comments concerning the physical and chemical characterization of NPNS' present raw wastewater and the proposed technology for treatment.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	Without getting into a detailed EEM plan, it should look at the chemical nature of the effluent, the benthic (bottom) communities around the discharge area, the potential effects on finfish moving through the area, and the impact on crab, lobster and scallop distribution. There will likely be an amended version of the PPER created by ECCC and DFO for the new effluent facility with regulations for maximum levels of certain parameters in the effluent itself (e.g., total suspended solids (TSS), biochemical oxygen demand (BOD), acute lethality, sub-lethal effects, as well as the other potential impacts already mentioned). Any proposed EEM program for the new system should also be available for review before it is implemented and will likely be included in the Provincial EA.	Pictou Landing First Nation	Refer to section 7.4 for comments concerning the Environmental Effects Monitoring (EEM) Program.
Harbour Physical Environment, Water Quality and Sediment Quality	Selection of treatment technologies consisted of comparison between ASB and AST advantages and disadvantages. This selection was not guided by assessment of receiving water or environmental impact.	Pictou Landing First Nation	Although the initial project concept development was based on meeting treatment requirements, the receiving water assessment was conducted to valid the approach chosen.
Harbour Physical Environment, Water Quality and Sediment Quality	Treated Effluent Plume Delineation – to verify the theoretical studies predicting certain dilution rates at 100 m from the diffuser – the “mixing zone”.	Pictou Landing First Nation	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	Page 14 - Plume delineation defines the “exposure area” to be where the concentration of effluent to seawater is periodically 1% or greater. They also define long-term conditions for this zone, but the definition is incoherent. Viz. .... “the zone within which effluent concentrations of 1% or greater, and 0.1% or greater would be regularly detectable.”	Pictou Landing First Nation	Refer to section 7.4 for comments concerning the Environmental Effects Monitoring (EEM) Program.
Harbour Physical Environment, Water Quality and Sediment Quality	Water Quality Samples: There was no details on where these samples are to be taken in the water column. A rationale for these parameters would make a stronger case for the time and expense. It would be expected that water quality samples would accompany any toxicity testing samples, but this was not defined.	Pictou Landing First Nation	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	Modeling of far-field dispersion characteristics indicated that CH-B was better at dispersing the discharge. Results under various tidal conditions in Figures 2.5 to 2.13 seem to indicate concentrations in surface waters but they only demonstrate the concentrations from the CH-B model. For comparison, CH-A should also be shown. Further, the locations of CH-A and CH-B should be shown on each of these Figures for relative notation of the predicted concentrations shown. There is no figure to show dispersion throughout the water column, i.e. a cross section.	Pictou Landing First Nation	CH-A is representative of the untreated effluent and as such was not modelled. Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The report does briefly discuss the role of ice conditions by saying more dilution/dispersion is expected under winter ice regimes. However, Table 2.1, which summarizes conditions and assumptions used in hydrodynamic modelling, doesn't outline how ice is modelled e.g. extent, thickness, type.	Pictou Landing First Nation	Refer to Section 4.2 and Appendix 4.2 for information associated with the 2019 Stantec RWS.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	The modelling exercise appears to focus on dilution/dispersion of the effluent as dissolved load within the water column. EXP hasn't noted anything in either report on the impact of natural suspended sediment loads in the Northumberland straits after large storm events. This suspended sediment may act on the positive side to adsorb contaminants. However, the key for impacts is then to determine where this sediment would settle out, which may be much farther away than 100 m discussed in the report. Assessing this transport method would also require: a. sedimentological transport modelling; b. an assessment of natural concentrations for the COCs in existing fine grained sediment deposition areas; and c. biological assessment of what is present in those deposition areas.	Pictou Landing First Nation	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	While PSPC regards the environmental assessment registration document produced by Dillon Consulting Ltd. as being of professional quality, the Department also notes informational deficiencies related to the marine environment. Specifically, Dillon has indicated in the registration submission that for situational reasons " ... it was not possible to conduct field work in the new pipeline corridor or marine environment in order to inform this EA Registration". It is understood that the additional work will be carried out during the spring and summer of 2019.	Public Services and Procurement Canada	Baseline marine fish and fish habitat survey were completed in 2019. The results are provided in Section 7.2 of the Focus Report.
Harbour Physical Environment, Water Quality and Sediment Quality	As the custodian of the seabed for the affected portion of the internal waters and territorial sea of Canada lying outside a province, PSPC would need to be asked to provide a licence allowing the use of the ocean floor for the construction and operation of the effluent pipe and outfall.	Public Services and Procurement Canada	Permits/permissions and/or easement or purchase of waters and seabed, as required, will be obtained prior to initiation of construction activities.
Human Health Evaluation	The list presented in Health Canada (2012) should be compared to the list of chemicals presented in the HHE to ensure all relevant chemicals related to pulp and paper mills are evaluated in the project.	Health Canada	Refer to section 6.1 for comments concerning potential air contaminants.
Human Health Evaluation	Health Canada is requesting more information about the appropriateness of comparing the future process to the existing process to determine COPCs given that the current system has a 30 or more day settling process to remove contaminants whereas the new process is expected to result in effluent discharge directly to the Northumberland Strait following treatment in the power boiler.	Health Canada	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology). Refer to Section 2.4 for discussion of the modelling results of the proposed ETF and the anticipated effluent quality. Discussions around the selection of COPCs can also be found in section 9.2.
Human Health Evaluation	Health Canada is requesting additional information about the expected chemical composition and chemical concentrations of the future effluent be provided in order to substantiate the conclusion that the future treated effluent will be of higher quality than the existing effluent that enters the Northumberland Strait, particularly given that the two effluent treatment processes are very different. Without this information, Health Canada cannot provide advice on whether the contaminants in the future effluent may have an impact on human health (either more or less than the current effluent) either through direct exposure pathways or through the consumption of marine species which may uptake these COPCs.	Health Canada	Refer to Section 2.4 for discussion of the modelling results of the proposed ETF and the anticipated effluent quality.
Human Health Evaluation	Given the unknown chemical composition of the future effluent, lack of baseline information on contaminants in the various environmental media (including marine foods), and the lack of understanding of current traditional food harvesting and consumption patterns within the Pictou Landing First Nation (PLFN) community, it is unclear how human health risks from the proposed project can be evaluated with any degree of certainty.	Health Canada	Additional information on the effluent characterization as well as a Human Health Risk Assessment (HHRA), including the pathway of seafood ingestion, is provided in Sections 3.3 and 9.0 of the Focus Report.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Human Health Evaluation	Given the concerns related to effluent discharges and subsequent uptake by marine species that may be consumed by local people, Health Canada advises that this additional pathway (uptake by marine species and subsequent consumption by people) should be further evaluated in a more quantitative human health risk assessment (HHRA) that should be conducted prior to the commencement of the project (Health Canada, 2010).	Health Canada	Additional information on the Human Health Risk Assessment (HHRA), including the pathway of seafood ingestion, is provided in Section 9.0 of the Focus Report.
Human Health Evaluation	See Section 2.4.1 of Health Canada (2012) for more information on appropriate methods to use to screen substances for further evaluation in an HHRA (Health Canada, 2012).	Health Canada	Thank you for the Comment. These were considered in the HHRA. See Section 9.2 of the Focus Report
Human Health Evaluation	Based on the information provided, it appears that literature-based sources were used to identify these characteristics for the local study population. Given that the PLFN or other local non-Indigenous people may have different characteristics due to genetics, dietary patterns etc., the use of default assumptions may not represent the characteristics of local people.	Health Canada	Additional information on the Human Health Risk Assessment (HHRA) is provided in Section 9.0 of the Focus Report.
Human Health Evaluation	Health Canada advises that all chemicals which may have an adverse impact on human health be evaluated, including substances with similar toxic endpoints which may have otherwise been screened out. Where similar effects may be possible, the cumulative health risks should be evaluated.	Health Canada	Additional information on the Human Health Risk Assessment (HHRA) is provided in Section 9.0 of the Focus Report.
Human Health Evaluation	Health Canada advises that there should be a discussion about recreational/traditional land use in closer proximity to the proposed project and the possible health implications of shorter-term exposure to the proposed list of air contaminants.	Health Canada	Additional information on the Human Health Risk Assessment (HHRA) is provided in Section 9.0 of the Focus Report.
Human Health Evaluation	The EA does not consider the impact the ETF and cooling towers might have on human health from exposure to Legionella bacteria found in associated with the ETF. An examination of this risk is warranted. (specifically Legionnaires disease)	Nova Scotia Environment – Environmental Health Unit	A biocide program will be included with the new cooling towers. See Appendix 1 on additional technology that will be installed in the future.
Human Health Evaluation	Adding to the complexity of the Project is the fact that Northern Pulp is unable to identify what chemicals and other substances may be in the treated effluent: EARD, pp. 489, 493, 506.	Pictou Landing First Nation	Refer to Table 9.2-2 in Section 9.2 for a list of COPCs considered in the HHRA.
Human Health Evaluation	No human health risk assessment has been completed: EARD, p. 490.	Pictou Landing First Nation	EcoMetrix has started the HHRA, and estimates completion of the study by spring of 2020.
Human Health Evaluation	the presence of dioxins and furans was ruled out because these are not expected in the elemental chlorine free bleaching process: EARD, p. 509. Yet the analysis of water following the recent escape of untreated effluent from the existing pipeline did show elevated levels of dioxins and furans, according to your department's own records.	Pictou Landing First Nation	Refer to Table 9.2-2 in Section 9.2 for a list of COPCs considered in the HHRA.
Human Health Evaluation	Another flaw in the EARD analysis is that it focuses only on the regulated chemicals of interest, primarily those regulated under the federal Pulp and Paper Effluent Regulations. Presumably this would carry through to a future human health risk assessment. Exp recommends characterizing the effluent by testing for the chemicals of concern noted above rather than restricting the analysis to regulated chemicals.	Pictou Landing First Nation	Refer to Section 9.2.
Human Health Evaluation	The human health risk assessment should be completed before any decision is made	Pictou Landing First Nation	EcoMetrix has started the HHRA, and estimates completion of the study by spring of 2020.
Human Health Evaluation	The lack of information on the environmental and health impacts of these chemicals of concern is a major deficiency in the EARD.	Pictou Landing First Nation	Refer to Section 9.2.
Human Health Evaluation	Required a Human Health Risk Assessment (HHRA)a. Federal Contaminated Site Risk Assessment in Canada, Part I: Guidance on Human Health Preliminary Quantitative Risk Assessment (PORA), Version 2.0, 2010, Revised 2012.	Pictou Landing First Nation	Refer to Section 9.2.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Human Health Evaluation	The Pictou West area, including the Town of Pictou is the recipient of a significant portion of the air emissions from the mill operations as shown in (Appendix E, Figures 1 and 2, Pages 3 and 5). As a result of this, residents and visitors alike have complained about the emissions including concerns for the long term effects on their health. Numerous studies suggest that higher levels of certain illnesses are evident in the area. For many years, dining and accommodation operators have also expressed concern about lost revenue as the result of odours associated with the air emissions from the mill.	Town of Pictou	EcoMetrix has started the HHRA, and estimates completion of the study by spring of 2020.
Human Health Evaluation	The Town also has concerns about any potential for increased odour produced by the re-location of the AST (Activated Sludge Treatment) process and risks associated with the emissions from the power boiler when the sludge is burned. We do not have in-house expertise to adequately assess potential effects and how they might affect air quality (safety).	Town of Pictou	EcoMetrix has started the HHRA, and estimates completion of the study by spring of 2020.
Indigenous Peoples Use of Land and Resources	No MEK has been obtained regarding the current proposed pipeline route: EARD, p. 451. No assessment has been made of the Pictou Landing First Nation's interactions with the marine environment: EARD, p. 490.	Pictou Landing First Nation	Refer to section 11.1 for comments relating to MEKS. There have been two MEK studies completed to cover the entire Project footprint.
Indigenous Peoples Use of Land and Resources	Final reporting on the Mi'kmaq Ecological Knowledge (MEK)	Pictou Landing First Nation	Refer to section 11.1 for comments relating to MEKS
Indigenous Peoples Use of Land and Resources	The Northumberland Strait, and in particular, the area surrounding the proposed discharge point, is part of the traditional fishing territory of the Mi'kmaq, and Pictou Landing First Nation commercial, food and ceremonial fishers in particular. The diffuser is located in DFO Lobster Fishing Area 26A where many PLFN fishers participate in the lobster fishery pursuant to private and communal commercial lobster licenses. The Pictou Landing First Nation commercial fishery is the single biggest industry within the community employing 100 people each year out of a population of 280 working age members: EARD, p. 450. Species that are fished within the vicinity of the proposed diffuser are rock crab, lobster, scallops, herring, mackerel and tuna.	Pictou Landing First Nation	Refer to Section 7.3. Significant impacts in relation to marine water quality are not anticipated on any fisheries or fish habitat to arise as a result of this project. To confirm these predictions, NPNS will continue with a federally-regulated environmental effects monitoring (EEM) program and additional EA Follow-up monitoring.
Indigenous Peoples Use of Land and Resources	Given the potential for serious harm to the Pictou Landing First Nation commercial, food and ceremonial fisheries from the chemicals contained in the effluent, this is a glaring omission from the EARD	Pictou Landing First Nation	Refer to Section 7.3. Significant impacts in relation to marine water quality are not anticipated on any fisheries or fish habitat to arise as a result of this project. To confirm these predictions, NPNS will continue with a federally-regulated environmental effects monitoring (EEM) program and additional EA Follow-up monitoring.
Indigenous Peoples Use of Land and Resources	Nova Scotia Environment should be requested to identify how they will manage the project – with First Nations – to ensure design plans are followed in the field and monitoring meets stipulations.	Pictou Landing First Nation	This question will be relayed to NSE.
Indigenous Peoples Use of Land and Resources	Subject to receiving a request for a license, PSPC is of the opinion that additional environmental assessment work will need to be carried out in order to satisfy CEAA 2012 Section 5 requirements and that additional consultations, particularly with First Nations, will be required. 2).identify potential environmental effects not described on the project website and their linkage to components of the environment under federal jurisdiction (as defined under section 5 of CEAA 2012.a). Identify whether any potential adverse effects are likely to be significant in nature; and,b). Comment on whether any potential adverse effects identified could be managed by existing regulatory processes.	Public Services and Procurement Canada	Additional information on the Human Health Risk Assessment (HHRA) is provided in Section 9.0 of the Focus Report. Discussions/consultations with PSPC will be had prior to getting any approvals or construction activities.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Indigenous Peoples Use of Land and Resources	Section 5(1 )(a) of the Act requires several environmental effects to be taken into account by a federal authority, and Section 5 (1)(b) specifies that related effects need to be assessed for federal lands. Section 5(1) (c) of the Act provides specific requirements related to Aboriginal peoples that must be met over the course of any Federal environmental assessment of a Project, and Section 5(2) provides further requirements for involved Federal Authorities which include effects relating to health, socioeconomics, and physical and cultural heritage.	Public Services and Procurement Canada	Comment acknowledged.
Marine Archaeological Resources	There is considerable archaeological content. The sections that cover both marine and terrestrial archaeology (8.16 and 8.17), clearly indicate that work has been completed, but there is more work to be done including a marine Archaeological Resource Impact Assessment and monitoring during construction, possible shovel testing, and contingency planning; see section 8.16.3.2 for all recommendations for marine archaeology mitigation and section 8.17 .3.2 for all recommendations for terrestrial archaeology mitigation. The ARIA by CRM Group Ltd. for terrestrial resources is noted, as well as the list of recommendations.	Nova Scotia Department of Communities, Culture and Heritage	Refer to section 2.1 for comments concerning effluent pipeline location, routing and intersecting properties.
Marine Archaeological Resources	There is considerable archaeological content. The sections that cover both marine and terrestrial archaeology (8.16 and 8.17), clearly indicate that work has been completed, but there is more work to be done including a marine Archaeological Resource Impact Assessment and monitoring during construction, possible shovel testing, and contingency planning; see section 8.16.3.2 for all recommendations for marine archaeology mitigation and section 8.17 .3.2 for all recommendations for terrestrial archaeology mitigation. The ARIA by CRM Group Ltd. for terrestrial resources is noted, as well as the list of recommendations.	Nova Scotia Department of Communities, Culture and Heritage	Refer to section 10.1 for comments concerning an Archaeological Resource Impact Assessment for the marine environment.
Marine Archaeological Resources	There is considerable archaeological content. The sections that cover both marine and terrestrial archaeology (8.16 and 8.17), clearly indicate that work has been completed, but there is more work to be done including a marine Archaeological Resource Impact Assessment and monitoring during construction, possible shovel testing, and contingency planning; see section 8.16.3.2 for all recommendations for marine archaeology mitigation and section 8.17 .3.2 for all recommendations for terrestrial archaeology mitigation. The ARIA by CRM Group Ltd. for terrestrial resources is noted, as well as the list of recommendations.	Nova Scotia Department of Communities, Culture and Heritage	Refer to Section 10.
Marine Archaeological Resources	There is considerable archaeological content. The sections that cover both marine and terrestrial archaeology (8.16 and 8.17), clearly indicate that work has been completed, but there is more work to be done including a marine Archaeological Resource Impact Assessment and monitoring during construction, possible shovel testing, and contingency planning; see section 8.16.3.2 for all recommendations for marine archaeology mitigation and section 8.17 .3.2 for all recommendations for terrestrial archaeology mitigation. The ARIA by CRM Group Ltd. for terrestrial resources is noted, as well as the list of recommendations.	Nova Scotia Department of Communities, Culture and Heritage	Refer to Section 10 for additional information associated with both marine and land-based archaeological resources.
Marine Fish and Fish Habitat	The proponent plans to execute the fish-population component of the EEM study by deploying caged mussels in exposure and reference areas The design for such a study should consider and plan for the possibility of the field schedule being delayed. Study designs must be submitted to ECCC at least 6 months before the beginning of sampling	Environment and Climate Change Canada	As part of EEM design, NPNS will consult with ECCC. Study design will incorporate the 6 month lead time requested.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	Although no sampling areas are specifically identified in Appendix G, the proposal to measure, using recommended methods for EEM, the baseline conditions in both the future exposure and reference areas before the new effluent outfall becomes operational is strongly supported by ECCC.	Environment and Climate Change Canada	Comment acknowledged.
Marine Fish and Fish Habitat	The proposal of collecting baseline EEM information at the project site's future exposure and reference areas is supported by ECCC. The reference area(s) should match the characteristics of the exposure area as closely as possible.	Environment and Climate Change Canada	Comment acknowledged.
Marine Fish and Fish Habitat	In ECCC's view, toxicity testing on lobster larvae and herring eggs with current NPNS effluent would not provide baseline effluent toxicity information for the future effluent.	Environment and Climate Change Canada	Refer to Section 2.4 for the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials. It is anticipated that the use of the current NPNS effluent would be a conservative assumption.
Marine Fish and Fish Habitat	At this time, the Project description is not sufficient to completely characterize the potential effects related to Section 35 of the FA. Additional information is required to sufficiently address the following information gaps: the disposal at sea location; the underwater marine benthic habitat survey; the detailed wetland and watercourse crossing information; and, the final pipeline construction methodology.	Fisheries and Oceans Canada	The marine outfall location is provided in the Project Overview of the Focus Report. Additional information on the marine fish and fish habitat baseline surveys is provided in Section 7.2 of the Focus Report. Additional information on wetland and watercourse crossings and pipeline construction methodology is included in Appendix A2.1-2 - Environmental Planning and Mitigation Measures of the Focus Report.
Marine Fish and Fish Habitat	The Project also identifies that there will be approximately 4 kilometers of marine pipeline work, including the following: dredging, side casting, rock mattress placement, pipe placement, potential pipe armoring, construction of temporary access roads, and disposal at sea activities. Despite Appendix F of the EA document being detailed in terms of the potential installation methods for the marine section of the pipeline, additional information is required for the completion of DFO's full assessment of the proposed activities. This information includes the following: a) Detailed benthic habitat information in the pipeline route; b) Mitigation measures associated with each potential installation method; c) Information at the pre-construction (baseline) and post construction monitoring phases of the Project, as well as during construction (e.g., information on turbidity monitoring, and how it will be conducted (divers, ROY, sampling program, etc.); d) Construction timelines; and e) Blastina details if likely.	Fisheries and Oceans Canada	Additional information on construction of the marine portion of the pipeline is provided in Section 2.5 of the Focus Report. Additional information on the baseline marine fish and fish habitat survey and effects assessment, including mitigation measures, are provided in Sections 7.2 and 7.3 of the Focus Report, respectively. Additional information on post-construction monitoring is provided in Section 7.4 of the Focus Report. Information required for a Fisheries Act authorization will be compiled for that application.
Marine Fish and Fish Habitat	With respect to the Marine Refuge Scallop Buffer Zone (SBZ) within Scallop Fishing Area 24, it forms part of DFO's Other Effective Area Based Conservation Measures that contribute toward Canada's 2020 Marine Conservation Targets (MCTs). The conservation objective is to protect juvenile lobster and its habitat by restricting the activity of scallop dragging in this area. If a new activity such as the effluent discharge is permitted in or around this area and later deemed incompatible with the stated conservation objectives, loss of Marine Refuge status may occur, in whole or in part. DFO has noted that the boundary of the marine refuge is not accurately represented in the EA document. As such, DFO is developing a more accurate image of the boundaries to clearly define the current Marine Refuge. It should be noted that, it is probable that the marine portion of the effluent pipe construction will travel through, and discharge inside the Marine Refuge. DFO recommends that the EA document also reflect that other species such as Sea Scallop and Winter Flounder are protected as part of the Marine Refuge. DFO will carefully assess the potential impacts to this physical habitat as part of the regulatory review process.	Fisheries and Oceans Canada	Additional information on the marine fish and fish habitat effects assessment is provided in Section 7.3 of the Focus Report.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	The Project also identifies that there will be approximately 4 kilometers of marine pipeline work, including the following: dredging, side casting, rock mattress placement, pipe placement, potential pipe armoring, construction of temporary access roads, and disposal at sea activities. Despite Appendix F of the EA document being detailed in terms of the potential installation methods for the marine section of the pipeline, additional information is required for the completion of DFO's full assessment of the proposed activities. This information includes the following: a) Detailed benthic habitat information in the pipeline route; b) Mitigation measures associated with each potential installation method; c) Information at the pre-construction (baseline) and post construction monitoring phases of the Project, as well as during construction (e.g., information on turbidity monitoring, and how it will be conducted (divers, ROV, sampling program, etc.); d) Construction timelines; and e) Blastina details, if likely.	Fisheries and Oceans Canada	Additional information on construction of the marine portion of the pipeline is provided in Section 2.5 of the Focus Report. Additional information on the baseline marine fish and fish habitat survey and effects assessment, including mitigation measures, are provided in Sections 7.2 and 7.3 of the Focus Report, respectively. Additional information on post-construction monitoring is provided in Section 7.4 of the Focus Report. Information required for a Fisheries Act authorization will be compiled for that application.
Marine Fish and Fish Habitat	Given the presence of sedentary 'non-fish' species such as oysters at the aquaculture sites, other bivalves such as blue mussels, and invertebrates such as sea urchins, crabs and lobsters, it is unclear whether this COPC list is sufficient given that these more sedentary species may be more exposed to the effluent that is to be discharged from the diffuser.	Health Canada	Additional information on the effluent characterization is provided in Section 3.3 of the Focus Report. Additional information about the receiving water study effluent loading are also provided in Section 2.4 of the Focus Report. Additional information on Marine Water and Marine Sediment Transport Modelling are provided in Section 4.0 of the Focus Report.
Marine Fish and Fish Habitat	Health Canada requests additional information to validate the use of these bivalve studies in evaluating future contaminant concentrations given the different effluent treatment processes and the decreased residency time of the effluent in the proposed project.	Health Canada	Refer to Sections 2.3.2 and 7.2 for information related to the anticipated effluent characteristics and the results of baseline studies conducted for the marine environment.
Marine Fish and Fish Habitat	Within the broader context of the project, it should be noted that there are relatively recent reports in the public media concerning the occurrences and changes of abundances of some "priority" fish and mammal species (Blue Whales, Striped Bass). It is recognized that the registration document reflects the state of knowledge at a given time and may not capture more-current events. It is expected that the review by the pertinent Regulatory agency (Fisheries and Oceans Canada) will capture those comments (especially the SARA-listed species).	Nova Scotia Department of Communities, Culture and Heritage	Effects of the project on the marine environment will be monitored over time through an Environmental Effects Monitoring program, details of which are provided in Section 7.4 of the Focus Report.
Marine Fish and Fish Habitat	There are currently 25 licensed aquaculture sites within 25 kilometers of the proposed project, with the potential to grow that number. There are 23 marine shellfish sites and two land-based sites, with the closest marine shellfish site is 2.47 kilometers away from the proposed outlet. Water quality is important to shellfish aquaculture and must be considered in evaluating the nature and dispersion of the effluent and in any mitigation strategies and emergency shutdown planning.	Nova Scotia Department of Fisheries and Aquaculture	Additional information on the marine fish and fish habitat effects assessment is provided in Section 7.3 of the Focus Report. Additional information on the updated Environmental Effects Monitoring program is provided in Section 7.4 and Addendum 4.0 of the Focus Report.
Marine Fish and Fish Habitat	There is no detailed assessment of the discharge plume effluent and its interaction with seabed and benthic environment beyond the statement it is unlikely to have adverse effects. The lack of an assessment or further discussion beyond this statement is insufficient information to assess if there are adverse effects to the marine benthic environment.	Nova Scotia Environment – Water Management Unit	Additional information on the marine fish and fish habitat effects assessment is provided in Sections 7.2 and 7.3 of the Focus Report. Additional information on the updated Environmental Effects Monitoring program is provided in Section 7.4 and Addendum 4.0 of the Focus Report.
Marine Fish and Fish Habitat	Appendix G, Section 3 lists the benthic invertebrate community assessment and fish population assessment pre-discharge surveys as 'proposed only' with respect to schedule.	Nova Scotia Environment – Water Management Unit	Additional information on the marine fish and fish habitat effects assessment is provided in Sections 7.2 and 7.3 of the Focus Report. Additional information on the updated Environmental Effects Monitoring program is provided in Section 7.4 and Addendum 4.0 of the Focus Report.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	Dark coloured effluents could create a visual barrier for aquatic species to find food sources and also prevent/restrict light penetration, necessary for the growth of aquatic plants.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Additional information on the receiving water study and the Environmental Effects Monitoring program are provided in Sections 4.2 and 7.4 of the Focus Report, respectively. Note that dark-coloured water is typical of most river systems in Nova Scotia due to high DOC and TOC levels. The colour of the discharged effluent would likely act in a similar manner to the discharge of a river system with high DOC into the marine environment. Additional information on the effects of the treated effluent on marine fish species is provided in Section 7.3 of the Focus Report.
Marine Fish and Fish Habitat	The submitted Scientific Literature Effect of BKME on Lobster report recommends site specific studies using actual Mill effluent to more accurately assess the potential for impact to adult lobsters including lethality, behavior, and sublethal impacts. The EARD proposes a post discharge survey within 24 months of the initiation of discharge from the new outfall location. This study should be conducted before the discharge location is approved as there is insufficient information in the EARD to assess the appropriateness of the proposed discharge location in relation to the effects of BKME on the lobster population.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Blasting has not been excluded as an option and could have significant impacts on the aquatic environment.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Based on the additional information provided in Section 2.5 of the Focus Report, the requirement for blasting is considered highly unlikely. Consultation with NSE will take place prior to construction activities.
Marine Fish and Fish Habitat	Further adding to the complexity of the Project is that the interaction of the chemicals in the proposed effluent, even if they are known, with living organisms is species dependent and cannot be extrapolated from one species to another: EARD, Appendix R, p. 1.	Pictou Landing First Nation	Comment acknowledged.
Marine Fish and Fish Habitat	No study of the marine benthic habitat has been undertaken along the proposed pipeline route although it is suggested that one will be conducted as part of the design and to facilitate a request for review by DFO: EARD, p. 21	Pictou Landing First Nation	Refer to Section 4.1.
Marine Fish and Fish Habitat	It does not appear that a benthic habitat study within the mixing area (100 metres from the diffuser) is being considered.	Pictou Landing First Nation	Refer to Section 4.1.
Marine Fish and Fish Habitat	There is no mention that any baseline studies have been undertaken to date either along the proposed pipeline route or in the mixing area. Once the seabed has been disturbed by trenching for the pipeline, no pre Project baseline will be available. The same can be said of the mixing area - once it begins to be impacted there is no possibility of obtaining baseline information. Marine benthic habitat studies are carried out over a yearlong cycle.	Pictou Landing First Nation	Refer to Sections 4.0 and 7.0.
Marine Fish and Fish Habitat	The Project has not been assessed from the point of view of impacts on fish and fish habitats.	Pictou Landing First Nation	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	The EARD contains a summary of existing research on the effects of bleached Kraft mill effluent on lobster prepared by Fraser Clark: EARD, Appendix R. While the conclusions of the research summary are based on the Receiving Water Study modelled by Stantec, the existing literature seems sparse and the author himself recommends further study on lethal and sub-lethal effects of bleached Kraft mill effluent on adult lobster and lobster larvae using current effluent.	Pictou Landing First Nation	Additional information on the marine fish and fish habitat effects assessment, including effects on key marine species, is provided in Section 7.3 of the Focus Report.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	Marine Benthic Habitat Study Along the Proposed pipeline Routea. EXP notes that the study should also include the 100 metre radius at the discharge point.b. EXP notes that the Metal Mining Technical Guidance for Environmental Effects Monitoring, Chapter 4, Effects on Fish Habitat: Benthic Invertebrate Community Survey offers a solid framework for establishing the scope of the Benthic Habitat Study.c. EXP notes that the study should be completed at a minimum of four sites along the proposed pipeline route, before construction.d. EXP anticipates that this study would require 2 days in the field to complete the sampling followed by a six week period for development of the report.	Pictou Landing First Nation	Refer to Addendum 4.0 for comments relating to biological monitoring studies including benthic invertebrates, fish population and dioxin and furan levels in fish.
Marine Fish and Fish Habitat	Harmful Alteration, Disruption or Destruction (HADD) of Fish Habitat Assessment for the pipeline and Water Crossingsa. Preliminary assessment of fish habitat along the pipeline route was done in December 2018 and is to be supplemented with habitat assessment at a more appropriate time(early summer). It is incumbent on the project to avoid, mitigate or offset the harmful alteration, disruption or destruction of fish habitat. This work needs to be addressed in consultation with Fisheries and Oceans. It is EXPs experience that between the field work, submittal and approval there is a two to three month turnaround time.	Pictou Landing First Nation	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.
Marine Fish and Fish Habitat	Studies to date have been deficient when examining the lethal and sub lethal effects of the proposed treated effluent on the various life stages of Lobster. It is recommended that both the larval and adult stages be assessed with the proposed treated effluent. The timeline for completion of this type of test is contingent on the availability of the new treated effluent. This is the difficulty with this study, in that it cannot be completed until after a new treatment system is in place. In terms of timing, it can be completed at anytime as it is a laboratory study, once the proposed effluent is available. This type of assessment could also be completed on any larval or adult species that is commercially fished in the Northumberland Strait.	Pictou Landing First Nation	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Without getting into a detailed EEM plan, it should look at the chemical nature of the effluent, the benthic (bottom) communities around the discharge area, the potential effects on finfish moving through the area, and the impact on crab, lobster and scallop distribution. There will likely be an amended version of the PPER created by ECCC and DFO for the new effluent facility with regulations for maximum levels of certain parameters in the effluent itself (e.g., total suspended solids (TSS), biochemical oxygen demand (BOD), acute lethality, sub-lethal effects, as well as the other potential impacts already mentioned).Any proposed EEM program for the new system should also be available for review before it is implemented and will likely be included in the Provincial EA.	Pictou Landing First Nation	Additional information on the proposed Environmental Effects Monitoring program is provided in Addendum 4.0 of the Focus Report.
Marine Fish and Fish Habitat	Biological monitoring of:i. benthic community "condition";ii. fish population health; andiii. dioxins and furans levels in fish.	Pictou Landing First Nation	An updated outline of the proposed EEM is provided in Section 7.4.
Marine Fish and Fish Habitat	In terms of a Work Schedule, they recommended doing a survey for the Benthic Community and the Fish Population health before any effluent is discharged as a baseline. The EEM from PPER does not require that any of this start before discharge of effluent begins. It will allow for more statistical analyses along a time axis, as well as a spatial one.	Pictou Landing First Nation	Refer to Sections 4.0 and 7.0.
Marine Fish and Fish Habitat	Baseline phytoplankton and zooplankton sampling not spelled out in terms of time should be done for 1 year before construction. There is so much patchiness and seasonal changes in these planktonic communities that any effect of the ETF will be undetectable. Seems to be work that we know will not yield useful data	Pictou Landing First Nation	Refer to Section 7.3. Further studies in the area of the proposed diffuser location have begun in the summer of 2019, with additional studies to be scheduled prior to any construction activities.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	Why would vertical tows for zooplankton be restricted to the photic zone?	Pictou Landing First Nation	Refer to Section 7.3. Further studies in the area of the proposed diffuser location have begun in the summer of 2019, with additional studies to be scheduled prior to any construction activities.
Marine Fish and Fish Habitat	A focus on zooplanktonic lobster sampling seems like it is trying to assure fishers that they are looking after lobsters, but it really will not show anything better than the toxicity testing of the effluent.	Pictou Landing First Nation	Comment acknowledged. Refer to Section 7.3 for additional information.
Marine Fish and Fish Habitat	Tissue Chemistry Testing: Done on a wide range of species found in the area, mostly those that are associated with the fishing industry. Need to sharpen that list of species and give a rationale for the items being measured.	Pictou Landing First Nation	Refer to Section 9.1. Baseline tissue sampling was conducted in July 2019 for representative key marine species important for commercial, recreational and Aboriginal fisheries.
Marine Fish and Fish Habitat	As previously noted, PSPC may be asked by the proponent to licence the use of the seabed. Should this occur, PSPC will need to be satisfied with regard to the significance of impacts on the marine environment as well as socioeconomic and cultural issues in relation to these environmental effects.	Public Services and Procurement Canada	Additional information on the marine fish and fish habitat effects assessment is provided in Section 7.3 of the Focus Report.
Marine Mammals, Sea Turtles and Marine Birds	Within the broader context of the project, it should be noted that there are relatively recent reports in the public media concerning the occurrences and changes of abundances of some "priority" fish and mammal species (Blue Whales, Striped Bass). It is recognized that the registration document reflects the state of knowledge at a given time and may not capture more-current events. It is expected that the review by the pertinent Regulatory agency (Fisheries and Oceans Canada) will capture those comments (especially the SARA-listed species).	Nova Scotia Department of Communities, Culture and Heritage	Thank you for your comment. The registration report focused on scientifically-validated or published and verifiable accounts of species distributions. Should additional information be provided by Fisheries and Oceans Canada, this information will be considered in the Focus Report.
Migratory Birds and Priority Species/Habitat	The proponent should clearly identify the potential adverse effects of project-related activities, including cumulative effects and effects of accidents, on Barrow's Goldeneye, as well as measures to avoid or minimize those effects, and to monitor them.	Environment and Climate Change Canada	Barrow's Goldeneye were included as one of the Migratory Birds and Priority Bird Species/Habitats in Section 8.10 of the EA report as well as in Section 8.13 - Marine Mammals, Sea Turtles and Marine Birds. The effects assessment, including mitigation measures, were identified in these sections. Cumulative effects were addressed in Section 12.3.6 and 12.3.9.
Migratory Birds and Priority Species/Habitat	Due to this lack of data, ECCC is not position to assess the predictions made in the report, nor to evaluate the potential environmental impacts related to that aspect of the project.	Environment and Climate Change Canada	Additional baseline information on migratory birds along the proposed realignment route are provided in Section 8.2 and 8.3 of the Focus Report. This additional data will allow a more complete prediction and assessment of the Project effects.
Migratory Birds and Priority Species/Habitat	The proponent should therefore be prepared to conduct systematic checks for stranded birds, rather than only conducting routine checks, whereby designated crew members record search effort (even when no birds are found). Should storm-petrels or other species become stranded on vessels or on land, the proponent is expected to adhere to the attached Procedures for handling and documenting stranded birds encountered on infrastructure offshore Atlantic Canada (2017), which provides safe and effective procedures for dealing with and documenting live and stranded birds. A permit is required to implement this protocol. The proponent should be advised that it is required to complete a permit application form prior to proposed activities. Permit application forms can be obtained by contacting ECCC's Canadian Wildlife Service (CWS) via email at <a href="mailto:ec.scfatpermits@permits.ec.gc.ca">ec.scfatpermits@permits.ec.gc.ca</a> .	Environment and Climate Change Canada	The methods proposed and guidance document found in the link provided will be considered when developing the monitoring program associated with stranded marine birds. Prior to conducting any surveys or activities that require permits, those permits will be obtained.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Migratory Birds and Priority Species/Habitat	It is recommended that proponents avoid or restrict the time of operation of exterior decorative lights such as spotlights and floodlights whose function is to highlight features of buildings, or to illuminate an entire building. Especially on humid, foggy or rainy nights, their glow can draw birds from far away. It would be best for the birds if these lights were turned off, at least during the migratory season, when the risk to birds is greatest and also during periods when Leach's stormpetrels would be dispersing from their colonies. Lighting for the safety of the employees should be shielded to shine down and only to where it is needed, without compromising safety. Street and parking lot lighting should also be shielded so that little escapes into the sky and it is directed where required. LED lighting fixtures are generally less prone to light trespass and should be considered.	Environment and Climate Change Canada	Thank you for the recommendation. These mitigation measures related to lighting will be considered, when appropriate, to reduce or avoid potential effects on birds from construction lighting.
Migratory Birds and Priority Species/Habitat	It is not clear what measures would be taken to protect birds (including avian species at risk) or sensitive habitats in the event of a spill of a substance harmful to birds. Even a small spill could be significant if it were to impact avian species at risk, sensitive habitats, or large numbers of birds. A spill response plan for the project should be prepared, for each phase of the project, and which includes a response plan for environmental emergencies that involve wildlife, and including detailed information regarding: <ul style="list-style-type: none"> <li>• measures to be taken to contain a spill and to clean up an area;</li> <li>• individuals/groups responsible for the cleanup;</li> <li>• equipment to be available to contain spills;</li> <li>• measures to be taken to prevent birds from becoming oiled (i.e. deterrents/measures to get oil off the water or land);</li> <li>• wildlife monitoring in the area (i.e. surveys)</li> <li>• a strategy to deal with accidents where birds were oiled (i.e. discussion of rehabilitation or euthanization) and/or sensitive habitat(s) was(were) contaminated.</li> </ul>	Environment and Climate Change Canada	Environmental Planning and Mitigation Measures are outlined in Appendix A0, which includes commitments on EPP development and on emergency response and contingency planning. Documents produced as part of these commitments will be submitted to NSE for review prior to construction activities.
Migratory Birds and Priority Species/Habitat	Section 8.10.3.1. Options be developed to discourage waterfowl and other wildlife from using spill basin and clarifiers.	Nova Scotia Department of Lands and Forestry	Maintaining an empty spill basin will be a priority throughout the duration of the project, to ensure its availability in the event of an emergency, as described in Section 3.4 of the Focus Report. As such, the spill basin is not anticipated to constitute a significant attractant to waterfowl or other wildlife species. Additionally, wildlife exclusion fencing will be installed at the spill basin, as necessary, and the majority of the ETF will be constructed in a manner to deter entry of wildlife species (e.g., appropriate wall heights). The existing NPNS wildlife policies will be enforced during operation and maintenance of the ETF to avoid attracting wildlife species to the project footprint.
Migratory Birds and Priority Species/Habitat	The majority of anticipated work for the pipeline appears to occur within the highway Right of Way (ROW). If this project receives approval, a condition of approval should be that development of mitigations for non migratory bird species, and nests or habitat for reptile and amphibian species that may be encountered during the course of work, must be done in consultation with, and approved by the Department of Lands and Forestry.	Nova Scotia Department of Lands and Forestry	A mitigation plan (Environmental Planning and Mitigation Measures - Appendix A2.1-2) has been prepared and identifies mitigation measures for priority species. Additional mitigation measures will be developed in consultation with Nova Scotia Department of Lands and Forestry, as necessary.
Migratory Birds and Priority Species/Habitat	A mitigation plan specific to raptor species be developed, given the high number of raptors encountered within the Local Area of Assessment (LAA) through desktop analysis and encountered during field work (Appendix Q).	Nova Scotia Department of Lands and Forestry	A mitigation plan (Environmental Planning and Mitigation Measures - Appendix A2.1-2) has been prepared and identifies mitigation measures for priority species. Additional mitigation measures will be developed in consultation with Nova Scotia Department of Lands and Forestry, as necessary.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Migratory Birds and Priority Species/Habitat	An explanation is required on how the interpretation of the bird survey results may have been affected as a result of discrepancies in the survey methods. Section 8.10.2.3 indicated that surveys were conducted for 10 min and all birds seen and heard during this timing window recorded from a stationary location, with additional time given to ensure all birds were recorded. However, Appendix Q shows time spent at each survey site, with a range from 1 min-33 min spent on site. Although there is sufficient explanation for the time extension beyond 10 min, no explanation is given for when a survey took less than 10 min to complete.	Nova Scotia Department of Lands and Forestry	Bird surveys were completed and the results can be found in Section 8.2 and 8.3.
Migratory Birds and Priority Species/Habitat	Develop a mitigation plan for priority species (as defined in Section 8.0 under Valued Environmental Components (VECs)) that are encountered during field surveys to be undertaken in 2019 along the proposed pipeline route. The proponent is also advised to consult with the Department of Lands and Forestry and to seek approval for the plan.	Nova Scotia Department of Lands and Forestry	Mitigation (Environmental Planning and Mitigation Measures - Appendix 0.2) has been prepared and identifies mitigation measures and commitment to contingency planning for priority species. An EPP will be produced for the project prior to construction and will be available for review by Nova Scotia Environment.
Migratory Birds and Priority Species/Habitat	Section 8.13.3.2: The Department requires additional mitigation measures be taken to prevent disturbance of the colony of Double Crested Cormorants nesting on the banks of the causeway. A colony survey by the Department in 2009 recorded 413 Double Crested Cormorants nests on the banks of the causeway and 83 nests of the causeway pilings. This bird is a provincial responsibility; therefore, appropriate mitigation measures must be approved by the Department of Lands and Forestry.	Nova Scotia Department of Lands and Forestry	Mitigation (Environmental Planning and Mitigation Measures - Appendix 02) has been prepared and identifies mitigation measures/contingency planning for priority species and for birds. Mitigation measures include timing construction to avoid disturbance of birds during the nesting period when they are most sensitive. Mitigation will be included in an EPP to be developed prior to construction and will be available for review by Nova Scotia Environment. It is noted that the pipeline route has been routed to avoid the Abercrombie Wildlife Management Area.
Migratory Birds and Priority Species/Habitat	It is recommended that the following surveys be added to the 2019 field season survey for birds and plants: <ul style="list-style-type: none"> <li>o Dedicated owl surveys and raptor nest searches at all project locations prior to the commencement of any work.</li> <li>o Previous survey efforts were not sufficient to assess Common Nighthawk (<i>Chordeiles minor</i>) as they are most active at dawn and dusk. Surveys for Common Nighthawks be conducted within the project area prior to commencement of work.</li> <li>o Surveys for the colony of Double Crested Cormorants nesting on the banks of the causeway and adjacent wharf pilings. This survey was not identified in the Environment Assessment under: Nesting Calendar for Breeding Birds within the Northumberland Lowlands Eco district (section 8.10.1.2).</li> <li>o Section 8.9.2. Herptile surveys were conducted once in June 2018. Herptiles typically have peak activity periods twice in the year (spring and fall). Additional herptile surveys be conducted during the fall activity period.</li> </ul>	Nova Scotia Department of Lands and Forestry	Focused surveys on owls, common nighthawks, double-crested cormorants, and herptiles were completed in 2019. Results of these surveys are provided in the Focus Report.
Migratory Birds and Priority Species/Habitat	Section 8.10.2.4. Great Cormorants are known to have bred on Amet Island in the Northumberland Strait and may still occur. This is a corrective note that the proponents may want to consider in future work on potential impacts to marine birds.	Nova Scotia Department of Lands and Forestry	Thank you for the note on historical occurrences of Great Cormorants on Amlet Island. This information will be considered in future work, and will be included in the planning around construction monitoring and future updates to environmental protection plans for the project.
Not included in VEC	it should be noted that the effluent discharged must also be in compliance with the Pulp and Paper Effluent Regulations (under the Fisheries Act) and the Pulp and Paper Mill Effluent Dioxin and Furan Regulations (under CEPA). The mill must also comply with the Pulp and Paper Mill Defoamer and Wood Chip Regulations (under CEPA). There is insufficient evidence presented in the Registration Documents to support the proponent's conclusions that the impacts are "Not Significant- Adverse". For instance, impact ranges were not estimated in quantified terms to fully address the various VECs identified.	Environment and Climate Change Canada	It is acknowledged that discharge must be compliant with PPER, the Pulp and Paper Mill Effluent Dioxin and Furan Regulations and as applicable with the Pulp and Paper Mill Defoamer and Wood Chip Regulations.
Not included in VEC	There is insufficient evidence presented in the Registration Documents to support the proponent's conclusions that the impacts are "Not Significant- Adverse". For instance, impact ranges were not estimated in quantified terms to fully address the various VECs identified.	Nova Scotia Department of Business	Additional studies have been completed as presented in the Focus Report to address requested data gaps and support the effects assessment.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Not included in VEC	This project has a potential wider ecological impact and perhaps should have used a different approach, since potential mitigation for rare species may not necessarily be consistent with the maintenance of ecological integrity (depending on the basis for designation of the species at risk).	Nova Scotia Department of Communities, Culture and Heritage	An updated EEM program outline is provided in Section 7.4.
Not included in VEC	Pipeline operation 5.3.2.4 indicates that incremental replacement of components may be required, however, a maintenance and monitoring schedule based on the industry standards was not provided.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	The development of a maintenance and monitoring schedule based on industry standard will be completed as part of operations planning for the facility.
Not included in VEC	Require a construction phase environmental management plan	Pictou Landing First Nation	NPNS has committed to development of environmental management planning for the project.
Not included in VEC	Require a construction phase environmental protection plan	Pictou Landing First Nation	NPNS has committed to development of an EPP for the project.
Pipeline Design	The proponent will require permissions from Land Administration (permit/easement/lease) for any pipelines, outfalls/intakes and other associated infrastructure beneath the Ordinary High-Water mark of both the large crossing at the junction of the three rivers before federal Pictou Harbour and in the Northumberland Strait. The project description notes portions of the pipeline will be constructed within the limits of the public highway, should this design change, there are Crown lands that about that public highway, and would require permissions from Land Administration (easement).	Nova Scotia Department of Lands and Forestry	Permits/permissions and/or easement or purchase of lands, as required, will be obtained prior to initiation of construction activities.
Pipeline Design	The proponent should review if insulation and protection of pipe is required where aboveground (i.e. along structures), and if insulation/mitigative measures is required for impacts the higher temperature effluent carrying pipeline may have on surrounding soil conditions during winter conditions e.g. potential for differential settlement, melting snow on ground surface, etc.	Nova Scotia Department of Transportation and Infrastructure Renewal	See bullet 4 of the Addendum 3 response in the Focus Report.
Pipeline Design	The proponent should consider if additional manholes are required to facilitate future inspection/repair of pipeline.	Nova Scotia Department of Transportation and Infrastructure Renewal	See the project overview for description of pipeline valves/manholes proposed.
Pipeline Design	It is difficult to provide detailed comments on impacts to structures at this stage as structural analysis and connection details are not provided. The pipe is relatively large and a structural evaluation of each structure to determine if it could support the weight based on CHBDC Code would be required.	Nova Scotia Department of Transportation and Infrastructure Renewal	NPNS will continue to work with NSTIR in the pipe design process.
Pipeline Design	Complete survey should be completed at each structure to confirm all dimensions. TIR may be able to provide design and/or as-built plans of some or all bridges for reference/information only. Plan, elevation, cross-section, excavation and fill details, and proximity to bridge elements for each structure would be required for subsequent design reviews.	Nova Scotia Department of Transportation and Infrastructure Renewal	NPNS will continue to work with NSTIR in the pipe design process.
Pipeline Design	Section 8.5.3.2. indicates that a system will be installed for the pipeline and associated pumping works that will detect leaks or significant drops in pressure during operation and maintenance. No details are provided as to the types of detection systems that are technically feasible for the proposed discharge pipeline and its preliminary design criteria. The ETF spill collection system proposes to include a 1.9 mm thick HDPE liner to avoid leakage. No details are provided on whether a monitoring system/program will be instituted around the basin area with respect to detecting leaks. As the spill collection basin will contain untreated effluent, it will be important to confirm the adjacent VECs are being adequately protected or identify if there is an inadvertent release.	Nova Scotia Environment – Water Management Unit	Refer to Section 3.5 for information associated with pipeline leak detection and protection.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Socio-Economic Environment	The Department's mandate includes operating provincial parks in the immediate coast line area of the outfall. The cumulative effects monitoring program should be expanded to include monitoring for impacts to recreation activities, specifically swimming and beach use, as part of the socioeconomic impacts in the outfall area. Provincial park coast line areas of interest include: Caribou-Munroes Islands, Waterside Beach, MacKenzie Beach and Melmerby Beach.	Nova Scotia Department of Lands and Forestry	As part of the EPP development, mitigation to limit potential disruption of recreational activities will be identified.
Socio-Economic Environment	Development of a monitoring plan for the Construction Phase to meet regulatory stipulations	Pictou Landing First Nation	As identified in the Environment Planning and Mitigation commitments (Appendix A0), an EPP will be developed and compliance monitoring undertaken.
Socio-Economic Environment	Pursuant to CEAA 2012, Section 5(1) and 5(2), PSPC expects that additional consultations and assessment efforts pertaining to social, economic and cultural factors will also require additional assessment.	Public Services and Procurement Canada	NPNS will conduct additional consultations/assessment as required in subsequent approvals and permitting processes.
Socio-Economic Environment	As previously noted, PSPC may be asked by the proponent to licence the use of the seabed. Should this occur, PSPC will need to be satisfied with regard to the significance of impacts on the marine environment as well as socioeconomic and cultural issues in relation to these environmental effects.	Public Services and Procurement Canada	NPNS will conduct additional consultations/assessment as required in subsequent approvals and permitting processes.
Socio-Economic Environment	Economic effects of potential disruption(s) to tourism traffic to and from the (Caribou, NS - Wood Island, PEI) ferry terminal during the construction phase of both the on-land and underwater portions of the effluent pipe.	Town of Pictou	The project design intends to minimize traffic disruptions to the extent possible.
Socio-Economic Environment	The EA registration document does not consider the potential impacts to navigation. Since a NPA approval is required, this should be added in Sections 7 and 8 of the document under the Socio-Economic Environment VEC.	Transport Canada	Transport Canada requirements have been identified under the Socio Economics in Appendix A0.
Soils and Geology	Detailed design for the HDD alignments should be conducted, including appropriate geotechnical investigations (including boreholes) and topographic surveys. These designs should be submitted to NSE for review and approval prior to commencement of activities.	Nova Scotia Environment – Water Management Unit	The mitigation commitments (Appendix A0) include the requirement for additional mitigative planning if HDD is undertaken.
Soils and Geology	Geotechnical Assessment along the land and underwater pipeline route.a. EXP notes that the sediments along the underwater pipe route should also be assessed for chemicals of concern which could include, at a minimum, metals, Polycyclic Aromatic Hydrocarbons (PAH) and Petroleum hydrocarbons (PHC). b. DFO may supply additional parameters to be analyzed once they review the application to dredge along the proposed route.c. The program should include assessment for the presence of unique habitats associated with submarine groundwater discharge sites.d. The Geotechnical assessment would be estimated to be completed within a two month window.	Pictou Landing First Nation	Refer to Sections 2.2 (Geotechnical Survey); 4.0 (Marine Studies) for additional information.
Soils and Geology	The EARD indicates aggregate will be required for the construction of the pipeline. It will be necessary to identify the source aggregate pits to ensure they are permitted and any quality issues pertaining to acid drainage or natural mineralization are accounted for.	Pictou Landing First Nation	The mitigation commitments (Appendix A0) include the requirement for approved and clean aggregate sources as required for applicable activities.
Soils and Geology	No geotechnical studies have been carried out on the seabed along the proposed pipeline route: EARD, p. 21. Information from the geotechnical study would allow a determination as to whether the proposed route will support the pipeline without risk to the integrity of the pipeline from future geological events.	Pictou Landing First Nation	Section 2.2 provides a summary of the marine geotechnical survey conducted for the proposed project.
Surface Water	A discussion on the potential need and options for leak detection should be included as part of the Spill Collection System.	Environment and Climate Change Canada	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Surface Water	At this time, the Project description is not sufficient to completely characterize the potential effects related to Section 35 of the FA. Additional information is required to sufficiently address the following information gaps: the disposal at sea location; the underwater marine benthic habitat survey; the detailed wetland and watercourse crossing information; and, the final pipeline construction methodology.	Fisheries and Oceans Canada	The marine outfall location is provided in the Project Overview of the Focus Report. Additional information on the marine fish and fish habitat baseline surveys is provided in Section 7.2 of the Focus Report. Additional information on wetland and watercourse crossings and pipeline construction methodology is included in Appendix A2.1-2 - Environmental Planning and Mitigation Measures of the Focus Report. Methods and locations for watercourse crossings will be discussed with Fisheries and Oceans Canada and approved prior to commencing construction activities around wetland and watercourses that provide fish habitat.
Surface Water	Appendix C outlines that the "current mill average effluent flow varies between 70,000 and 75,000 m3/day". This does not align with the 62,000 m3/day average reported in the submission. The values used in the receiving water study and for the design of the ETF are a maximum flow rate of 85,000 m3/day. A clear rationale for this design flow has not been provided in the submission.	Nova Scotia Environment – Industrial Management Unit	Refer to section 3.2 for comments concerning effluent flow volumes.
Surface Water	As it drives the design of the EFT and receiving water study, it is critical to have confidence in the 85,000 m3/day maximum water use. At current, it is unclear how this number was determined and whether it is appropriate. Clarification surrounding the rationale for this number is required.	Nova Scotia Environment – Industrial Management Unit	Refer to section 3.2 for comments concerning effluent flow volumes.
Surface Water	Considerations for risks to the environment from using the HDD method have not been provided in the submission. It is recommended that detailed plans for any Horizontal Directional Drilling be provided to the Department for review prior to use of this methodology, with considerations for any potential risk and mitigation to nearby watercourses associated with using this method. It is also recommended that alternatives to HDD are presented as part of the application process so that any watercourse alteration activities can proceed effectively if HDD is not deemed feasible in the field.	Nova Scotia Environment – Industrial Management Unit	The mitigation commitments (Appendix A0) include the requirement for additional mitigative planning if HDD is undertaken.
Surface Water	Additional details surrounding the approach to pipe leak detection, with considerations for addressing the areas with highest downstream risk, is recommended.	Nova Scotia Environment – Industrial Management Unit	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
Surface Water	Additional information on the specific substances present in treated effluent (including chemicals and microorganisms introduced in the treatment process), their anticipated concentrations and their risk to the environment should be provided.	Nova Scotia Environment - Resource Management Unit	Additional information effluent constituents and concentrations are provided in the Focus Report
Surface Water	Horizontal direction drilling (HDD) is proposed as a pipeline installation method under watercourses/wetlands (Section 5.3.1.8). Drilling muds are listed as predominantly consisting of a mix of water and bentonite clay. Typically HDD mud mixtures also include the addition of polymers and surfactants to stabilize soils and disperse clay particles, respectively ( <a href="http://factsheets.okstate.edu/documents/pss-2916-can-urban-horizontal-directional-drilling-mud-be-land-applied-2/">http://factsheets.okstate.edu/documents/pss-2916-can-urban-horizontal-directional-drilling-mud-be-land-applied-2/</a> ). HDD has the potential to inadvertently release drilling fluid into a wetland or watercourse that is above the borehole, which is sometimes referred to as a fracout ( <a href="http://trca.on.ca/dotAsset/105401.pdf">http://trca.on.ca/dotAsset/105401.pdf</a> ). There is no direct discussion of this potential inadvertent release mechanism in the Registration Document and mitigating its impacts to aquatic ecosystems.	Nova Scotia Environment – Water Management Unit	The mitigation commitments (Appendix A0) include the requirement for additional mitigative planning if HDD is undertaken.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Surface Water	The proposed ETF is within the tertiary watershed 1DP-SD8, which discharges into Pictou Harbour. One mapped unnamed watercourse (WC2) is identified within the footprint and the spill basin construction area, which will require realignment and/or partial removal. The adjacent WC1 unnamed watercourse may require reconfiguration as well for proposed site activities. Both watercourses receive site drainage from the existing NPNS site and will continue to receive localized surface water runoff following Project construction.	Nova Scotia Environment – Water Management Unit	Refer to Section 7.0 for baseline study results.
Surface Water	The pipeline alignment route crosses three tertiary watersheds, which are 1DP-SD8 (1 unnamed watercourse [WC4]), 1DP-SD3 (seven unnamed watercourses [WC5 – 6; WC12 - 16] and 1DP-SD4 (five unnamed watercourses [WC7 – 11]). All of these are shore direct drainage areas that drain into either Pictou Harbour or the Northumberland Strait directly. The pipeline also directly crosses Pictou Harbour and within the Northumberland Strait to the discharge location near Caribou Point. These watercourses would be potentially impacted during the construction phase by the pipeline installation and in the case of an inadvertent release (leak or spill).	Nova Scotia Environment – Water Management Unit	Refer to Sections 4.0 and 5.0 for the results of the baseline studies. Additionally, Section 3.5 provides information on effluent pipeline leak detection.
Surface Water	No reasoning was provided why surface water quality data collected since 2012 was not included in the baseline assessment. General discussion of exceedances was provided.	Nova Scotia Environment – Water Management Unit	Surface water quality data presented was intended to provide the most recent dataset to illustrate baseline conditions. Additional seasonal baseline will be collected as noted in Appendix A0.
Surface Water	Within the pipeline route, surface water quality grab samples were collected on Dec 3, 2018 along with in-situ field measurements using a water quality probe (Section 8.4.2.2). The results were compared against the CCME CEQG-FAL as well as CCME CEQG for marine aquatic life for watercourses with a direct marine connection. No additional criteria are provided as to what designates a watercourse a direct marine connection. General discussion of the water quality results in comparison to applicable CCME CEQG criteria is provided.	Nova Scotia Environment – Water Management Unit	Refer to Sections 4.0, 5.0 and 7.0.
Surface Water	Section 8.4.5 indicates that follow-up baseline surface water quality monitoring is not required within the proposed ETF site. Section 8.5.5 indicates additional baseline surface water quality monitoring may occur in areas identified as potential areas where surface water is expected to infiltrate into the local groundwater table along the pipeline footprint area. No other surface water baseline monitoring is proposed prior to project construction along the pipeline corridor.	Nova Scotia Environment – Water Management Unit	Refer to Section 5.2 for additional details associated with the proposed monitoring programs.
Surface Water	During the Project construction phase there is the potential for petroleum hydrocarbon spills from stationary and mobile equipment. Petroleum hydrocarbons were also measured above reportable detection limits in the untreated effluent sample in 2018 (Section 9.2.4.2). Reportable detection limit values are not provided.	Nova Scotia Environment – Water Management Unit	The laboratory RDLs for BTEX and petroleum hydrocarbons will be less than or equal to the applicable environmental and human health benchmarks.
Surface Water	Having preconstruction analysis results for the full list of potential contaminants of concern in the freshwater and marine systems within the Project footprint provides a comprehensive baseline for evaluating project effects.	Nova Scotia Environment – Water Management Unit	Refer to Section 2.3 and 2.4 for information associated with the chemical characterization of the influent, treated effluent for the proposed ETF and the receiving environment.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Surface Water	Table 8.4-1 indicates classification of watercourse types (intermittent, small and large permanent) based on site visits with those along the pipeline route only having one site visit in December 2018. Section 8.4.2.1 provides further details on the watercourse observations. One site visit is typically insufficient to assess whether a watercourse has a permanent or intermittent flow regime.	Nova Scotia Environment – Water Management Unit	<p>Refer to Section 7.0 for additional information of the completed baseline studies.</p> <p>A surface water monitoring program will be developed and maintained over the life of the project in accordance with the requirements stipulated by NSE through an IA requirement for the entire land-based portion of the pipeline. A baseline surface water monitoring program is currently underway and will be completed prior to project commencement in order to satisfy future IA requirements.</p> <p>A fish habitat baseline survey was completed by biologists in 2019 to identify the freshwater environments along the re-aligned effluent pipeline route that could provide habitat for fish.</p> <p>Refer to Section 7.0 for additional information of the completed baseline studies.</p>
Surface Water	Flow observations for each watercourse in Appendix M3 are subjective and based on one site visit conducted in December 2018. One site visit is typically insufficient to assess whether a watercourse has intermittent flow, particularly as per the photos in Appendix M2 where several the watercourses have partial ice coverage, which effects flows. Flows (Appendix M3) should also have been measured during the site visit for non-ice-covered sites using a velocimetry and calculated using the velocity-area method (or other standard method), instead of general categorization based on visual observations.	Nova Scotia Environment – Water Management Unit	<p>A surface water monitoring program will be developed and maintained over the life of the project in accordance with the requirements stipulated by NSE through an IA requirement for the entire land-based portion of the pipeline. A baseline surface water monitoring program is currently underway and will be completed prior to project commencement in order to satisfy future IA requirements.</p> <p>A fish habitat baseline survey was completed by biologists in 2019 to identify the freshwater environments along the re-aligned effluent pipeline route that could provide habitat for fish.</p>
Surface Water	Section 8.6.2.3 refers to watercourse widths and depths for the watercourses within or adjacent to the Project footprint. No table or field notes are provided listing these observed measurements. Having these values in a table or field notes would provide baseline data to support impact assessment and potential future watercourse alteration approval applications.	Nova Scotia Environment – Water Management Unit	Refer to Section 7.1 for additional information of the completed baseline studies.
Surface Water	The proposed construction surface water quality monitoring program (Section 8.4.5) should as described in the Registration Document be developed in consultation with NSE and include appropriate upstream and downstream monitoring during storm events. Monitoring should also be conducted when there are in-water activities occurring. Appropriate monitoring compliance criteria (e.g., Canadian Council of Ministers of the Environment Canadian Environmental Quality Guidelines for Freshwater Aquatic Life TSS and/or turbidity criteria [ <a href="http://st-ts.ccme.ca/en/index.html">http://st-ts.ccme.ca/en/index.html</a> ]) should be part of the program to determine compliance and when to implement additional mitigation measures.	Nova Scotia Environment – Water Management Unit	Refer to Sections 5.0, 7.0 and 8.0 for additional information on baseline studies. Monitoring programs to be applied during the construction phase will be developed in consultation with NSE.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Surface Water	At least one additional watercourse site visit should be conducted during ice-free conditions to at least the pipeline route intercepted watercourses. The site visits should document qualitative and quantitative channel bed and bank measurements and characteristics (e.g., bed materials, vegetative cover) at an appropriate cross-section and potentially support watercourse and/or wetland applications (if required).	Nova Scotia Environment – Water Management Unit	Refer to Sections 5.0 and 7.1.  A surface water monitoring program will be developed and maintained over the life of the project in accordance with the requirements stipulated by NSE through an IA requirement for the entire land-based portion of the pipeline. A baseline surface water monitoring program is currently underway and will be completed prior to project commencement in order to satisfy future IA requirements.  A fish habitat baseline survey was completed by biologists in 2019 to identify the freshwater environments along the re-aligned effluent pipeline route that could provide habitat for fish
Surface Water	There is an existing groundwater and surface water monitoring program at the mill site, which would have to be modified to accommodate the proposed project. Changes to the current monitoring locations, parameters, and frequency would be based on the proposed new infrastructure, such as the spill basin, clarifiers, and chemical storage, and effluent quality. Additional baseline data would also have to be collected.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Refer to Sections 3.5 and 5.2, the existing network of monitoring wells associated with the NPNS monitoring program has been and will continue to be used to monitor groundwater (elevations and quality) at the NPNS property before and after the ETF is constructed.
Surface Water	Development of the Sediment and Erosion Control Plan for the Construction Phase	Pictou Landing First Nation	Environmental protection plans will be developed as required by NSE to provide adequate protection during the construction phase.
Terrestrial Heritage Resources	Archaeological Assessments along the New Route	Pictou Landing First Nation	Refer to Section 10 for additional information associated with both marine and land-based archaeological resources.
Terrestrial Wildlife/Priority Species	Section 8.9.3.1 and 8.10.3.1. Construction activities should be mitigated to address any impacts to wildlife and wildlife habitat with respect to light, noise, and dust.	Nova Scotia Department of Lands and Forestry	Mitigation measures and commitments identified in Section 8 will be incorporated into a construction environmental management plan for implementation to reduce or avoid effects on wildlife and wildlife habitat.
Terrestrial Wildlife/Priority Species	Develop a mitigation plan for priority species (as defined in Section 8.0 under Valued Environmental Components (VECs)) that are encountered during field surveys to be undertaken in 2019 along the proposed pipeline route. The proponent is also advised to consult with the Department of Lands and Forestry and to seek approval for the plan.	Nova Scotia Department of Lands and Forestry	Environmental Planning and Mitigation Measures are outlined in Appendix A0.2, which includes commitments on EPP development and on emergency response and contingency planning for priority species. Consultation with NSLF is anticipated. Documents produced as part of these commitments will be submitted to NSE for review prior to construction activities.
Terrestrial Wildlife/Priority Species	It is recommended that the following surveys be added to the 2019 field season survey for birds and plants: o Section 8.9.2. Herptile surveys were conducted once in June 2018. Herptiles typically have peak activity periods twice in the year (spring and fall). Additional herptile surveys be conducted during the fall activity period.	Nova Scotia Department of Lands and Forestry	Herptile surveys were completed during the 2019 field season. Additional information on the herptile surveys is included in Section 8.4 of the Focus Report.
Wetlands	At this time, the Project description is not sufficient to completely characterize the potential effects related to Section 35 of the FA. Additional information is required to sufficiently address the following information gaps: the disposal at sea location; the underwater marine benthic habitat survey; the detailed wetland and watercourse crossing information; and, the final pipeline construction methodology.	Fisheries and Oceans Canada	As part of Fisheries Act authorizations, crossing design and methods and locations for watercourse crossings will be provided to Fisheries and Oceans Canada and approval required prior to commencing construction activities around wetland and watercourses that provide fish habitat.
Wetlands	The Project description also identified and provided a thorough preliminary assessment of nine freshwater watercourses, and 11 wetlands that provide fish habitat. It should be noted that any watercourse or wetland alteration from pipeline installation works would be subject to regulatory review by DFO, under Section 35 of the FA. Therefore, DFO would require, for each watercourse or wetland alteration application, site specific information, including but not limited to, pipeline methodologies and timelines for any pipe installation. Additionally, a detailed fish habitat assessment, conducted by a certified habitat assessment specialist, would be required.	Fisheries and Oceans Canada	A fish habitat baseline survey was completed in freshwater watercourses that cross the project area to identify environments that could provide suitable fish habitat. Baseline fish surveys were subsequently completed to supplement the fish habitat survey. The results of these surveys are provided in Section 7.1 of the Focus Report. Where required (i.e., where alteration to a potentially fish-bearing watercourse or wetland is necessary), authorization will first be obtained under Section 35(2) of the Fisheries Act.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Wetlands	Methods and locations for watercourse and wetland crossings have not been confirmed therefore additional information is required to assess the potential environmental impacts.	NSE–Inspection, Compliance and Enforcement Division and Industrial Management Unit	Methods and locations for watercourse crossings will be discussed with Fisheries and Oceans Canada and approved prior to commencing construction activities around wetland and watercourses that provide fish habitat.
Wetlands	Follow Up work on the Pipeline Preliminary Assessment completed in Fall 2018. Preparation of design and request for permitting associated with wetlands and other water crossings	Pictou Landing First Nation	Refer to section 5.1 for the wetland baseline and section 7.1 for fish habitat baseline. As identified in Appendix A0, applications for watercourse and wetland crossings will be submitted as required to federal and provincial authorities.
Wetlands	Further assessment on Species At Risk (SAR) due to the Wetland Survey being completed in December 2018. a. EXP notes that wetland surveys for SAR should be completed at least twice during the plant growing season. Once in June (late spring) and secondly in September (early fall).	Pictou Landing First Nation	Refer to section 5.1 for comments concerning wetland baseline surveys and effects to wetlands. Section 8.1 provides plant survey data completed during early and late seasons.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Acoustic Environment	He also expresses his concerns regarding the impact of noise and disruption from the installation and operation of the effluent pipeline and diffuser in this area.	EcoJustice and Friends of the Northumberland Strait	Noise will be mitigated during construction as outlined in the EARD. There will be no known significant impacts to the acoustics in the marine area due to the operation of the diffuser.
Acoustic Environment	I am concerned about the potential impact of a pipe carrying and continuously discharging up to 3 million litres an hour of effluent through three diffusers, and the potential that this will produce noise and/or vibration that would disturb marine life.	Individual Public Comment	This has been assessed and a discussion on the effects to the receiving water body are available in Section 4.2 of the Focus Report.
Acoustic Environment	It would be a good idea to do some quick nest surveys for those barn swallows, as their nests might be in existing structures near the ETF footprint. If that is the case, the construction phase should avoid conducting work during the nesting season, to avoid displacing the birds or interrupting their foraging patterns through excess noise and emissions.	Individual Public Comment	Breeding bird surveys were undertaken at the ETF property in 2018. NPNS has committed to meeting the requirements under the Migratory Birds Convention Act including avoiding clearing during the nesting season or as advised by regulatory authorities.
Atmospheric Environment	As discussed below, no testing or test results have been provided to show the effluent's composition. Most of the substances contained in raw effluent are not discussed, and their impacts on the marine, freshwater, terrestrial and atmospheric environments are not analysed. Likewise, as will be discussed further below, the Stantec modelling used to predict the effluent mixing and transport in the marine environment has fundamental flaws, and must be disregarded.	EcoJustice and Friends of the Northumberland Strait	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	Dr. Sears also notes exceedances in air emissions of hydrogen sulphide associated with the mill	EcoJustice and Friends of the Northumberland Strait	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report.
Atmospheric Environment	FONS members were appalled by the prospect of up to 85,000,000 litres of hot treated effluent containing harmful chemicals, being pumped directly and continuously into the Strait every day. They are very concerned about the potential for serious and irreversible damage to Pictou County's air, soil, freshwater, wetlands and wildlife, and to the Strait ecosystem and the local economy it supports, including fisheries and tourism.	EcoJustice and Friends of the Northumberland Strait	The Project will meet environmental regulations and requirements, and the Proponent will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment.
Atmospheric Environment	In a report in 2017, Emma Hoffman and co-researchers conducted a pilot study of air quality issues in the Pictou area. <sup>123</sup> The study investigated prioritized air toxic ambient VOC concentrations to determine whether these correlated with wind directions and whether there was an indication that toxic ambient VOCs were linked to the NPNS mill. The study acknowledged its limitations, but concluded that elevated levels of certain toxins were apparent when prevailing winds came from the direction of the mill.	EcoJustice and Friends of the Northumberland Strait	Refer to section 6.2 for comments concerning air dispersion modelling.
Atmospheric Environment	It is stated in the EA Registration document (e.g., Table 6.7-1), "In fact, dioxins and furans testing for the last 5 years has consistently shown that all of the compounds required to be tested under the regulations have not been detected in NPNS' effluent (non-detect)." The dioxin-free message is not consistent with reports from Northern Pulp that are posted on the Nova Scotia government website, nor the data reported to the National Pollutant Release Inventory (NPRI). <sup>17</sup> NPRI data indicates that on average 3.6 tonnes of PAHs have been emitted to the air annually since 2006, and 8 mg TEQ dioxins/furans have been emitted annually since 2011.	EcoJustice and Friends of the Northumberland Strait	Refer to section 6.2 for comments concerning air dispersion modelling.
Atmospheric Environment	The EA submission, although lengthy, lacks critical information, or sufficient detail, in crucial areas such as: (k) Air emissions data from current operations from all stacks and vents;	EcoJustice and Friends of the Northumberland Strait	Refer to section 6.2 for comments concerning air dispersion modelling.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Atmospheric Environment	The impacts of mercury and cadmium are not assessed in any meaningful way in the EA submission, yet they are clearly present in the effluent from the Mill and in the sediments in Boat Harbour Basin. The long-term effects of discharging such substances into the marine environment are not addressed in the NPNS submission, despite the potential impacts on the marine ecosystem and marine species and human health, as well on air quality via burning sludge. The impacts of these substances, being bio-accumulative, must be analyzed.	EcoJustice and Friends of the Northumberland Strait	Refer to section 6.2 for comments concerning air dispersion modelling.
Atmospheric Environment	There is likewise a lack of information regarding toxic metals and polyaromatic hydrocarbons (PAHs) in air emissions	EcoJustice and Friends of the Northumberland Strait	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	With respect to air quality, again actual testing of co-combustion of hog fuel and sludge in the power boiler has not occurred, but a "pilot study" is contemplated.122 No explanation was provided as to why such testing could not have been done prior to the EA.	EcoJustice and Friends of the Northumberland Strait	The mill could not perform a pilot study since the sludge is not currently being produced. There are slight variations in the sludge from mill to mill due to difference in water sources and where the trees come from. Ambient air testing will be performed once the sludge is being produced and combusted to verify the model and that the air regulations are being satisfied, as expected. Refer to sections 6.2 & 6.3 for more information.
Atmospheric Environment	In the plan outlined in NPNS's registration document, sludge will be collected early in the effluent treatment process and will then be burned in the NPNS power boiler. Chemicals from this process, including Polycyclic Aromatic Hydrocarbons, Volatile Organic Compounds, sulphur and chlorinated compounds, benzene, cadmium, as well as fine particulate matter will be released.	Ecology Action Centre	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	Details are required regarding adaptive management measures, to address the potential for actual air emissions to be greater than predicted emissions (based on modelling exercises). In addition, further discussion in the EA is needed regarding what is meant by an artifact of model inputs related to modelled exceedances of H2S (Section 9.2.4.1).	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data and discussion of results.
Atmospheric Environment	If 2018 air monitoring data are available from Stantec (2019), they should be included in the assessment.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 6.2 for comments concerning air dispersion modelling.
Atmospheric Environment	NPNS must confirm that the pilot study will be completed to evaluate the potential impacts to air quality due to the combustion of hog fuel and sludge in the power boiler and must outline adaptive management strategies should the results of the air monitoring and pilot study not align with the assumptions and predictions of the current assessment.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	move action to comment
Atmospheric Environment	The Northern Pulp treatment system proposal includes a plan to burn the waste sludge. The waste sludge contains toxins which would be released through the stacks of the mills power boiler. The proposal is to dewater the sludge prior to mixing it with bark and other wood waste for combustion in the mills power boiler. This is the same power boiler that is currently and repeatedly failing stack emissions tests. Problems with air quality from mill emissions have been documented for years. Lack of appropriate monitoring and enforcement already puts area residents at risk. Now, Northern Pulp is considering adding sludge containing toxins to the combustion mix, increasing health risks from NPs air emissions. It is also important to note, the route of this effluent pipe goes through the source water supply for the town of Pictou and community of Caribou and surrounding area.	Individual Public Comment	Refer to Section 6.1 for comments concerning potential air contaminants. The updated air monitoring plan is provided in Section 6.3.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Atmospheric Environment	"Potential for odour to be perceived." This is not sufficiently described.	Individual Public Comment	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	Add to all this is the fact that Northern Pulp does not know just exactly what the effluent is comprised of. Yet they want to pump millions upon millions of this toxic sludge into our waters with no concerns for our health, the environment, tourism, wildlife, fish habitat and absolutely no appreciation for nature, just to name a few. Also, the new pipeline necessitates the burning of solid waste through their already inefficient burner systems creating further air pollution. The current air pollution according to a Dalhousie study is already a significant health hazard to the general population in the area.	Individual Public Comment	Refer to section 6.1 for comments concerning potential air contaminants. The Project will meet environmental regulations and requirements, and the NPNS will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment.
Atmospheric Environment	Another grave concern is the fact that as this EA is a class 1 proposal, limited information is provided about the plan to collect and burn the sludge that will accumulate in the proposed ETF. No Human Health Risk Assessment has been carried out to ascertain additional dangers to human health should the sludge be burned in the stacks belonging to NP. These are stacks which have repeatedly failed emissions testing regulations in previous years. As it seems, according to the EA, the actual content of this sludge is not entirely certain. How can we risk burning it and emitting it into the air breathed by tens of thousands?	Individual Public Comment	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	As a wife and mother, I have grave concerns regarding their plan to place a pipe into the Northumberland Strait. 1. Air Pollution: Why doesn't Northern Pulp have to have "Continuous Emissions Monitoring" CEM on all of their stacks like other mills in Canada are required to do with live streaming to a website for everyone to see exactly what chemical compounds are being released and whether or not they are surpassing the risk thresholds?	Individual Public Comment	NPNS complies with the requirements of its approval to operate, which includes an annual emissions testing program for its emission sources. CEMs are not common on most stacks for mills in Canada. For certain industrial sectors, select sources have installed CEMs for specific operational purposes. CEMs have practical and technical limitations as well and can only monitor for common combustion emissions.
Atmospheric Environment	As to air emissions, there is inadequate information as to the new sludge burning in the power boiler at maximum production, the emissions and the impact to existing scrubber? Precipitator? capacity.	Individual Public Comment	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	Burning chemical laden sludge as a treatment method will prove very harmful to air quality and Northern Pulp has offered no data to assure us otherwise	Individual Public Comment	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	Contaminated sludge from the effluent treatment system will be burned in the boiler facility -- thus spreading more pollutants into the air -- regardless of scrubbers, there will be some percentage of release.	Individual Public Comment	NPNS Power Boiler regulatory tests have been within operating permit limits - no exceedances - since June 2017. Significant investment and operating training has occurred leading to the consistent operation that has reduced NPNS environmental footprint. Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	Current air monitoring is minimal and that tells me Northern Pulp will continue minimal reporting.	Individual Public Comment	Refer to section 6.3 for comments concerning an ambient air monitoring plan.
Atmospheric Environment	Finally, the new effluent treatment system requires burning sludge, but the proposal does not indicate additional pollution abatement equipment that will be a part of the power boiler stack to minimize environmental impacts of burning something with unknown characteristics.	Individual Public Comment	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	I also have grave concerns regarding the burning of toxic solid waste in an antiquated boiler without constant monitoring. Northern Pulp has an extensive record of noncompliance to their IA conditions when it comes to air emission.	Individual Public Comment	Refer to section 6.3 for comments concerning an ambient air monitoring plan.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Atmospheric Environment	I am also concerned regarding the bio-solids that are removed as part of the treatment system. According to Guy Martin, the principle consultant with KSH Consulting in Montreal and lead engineer for the design in the construction of the wastewater treatment plant for Northern Pulp," the solids that are lost within the production and the bio-solids that are removed as part of the treatment system, those will be pressed and the current plan is to use them as fuel in the mills part boiler."We need to know that all mercury, will be removed before burning because of how harmful inhalation of mercury vapour is. Mercury vapour can produce harm on the nervous, and immune systems.Damage by mercury to the lungs can prove fatal.	Individual Public Comment	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	I am also concerned with the idea they have on burning sludge.	Individual Public Comment	NPNS Power Boiler regulatory tests have been within operating permit limits - no exceedances - since June 2017. Significant investment and operating training has occurred leading to the consistent operation that has reduced NPNS environmental footprint. Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	I am further concerned about the health of people living close to Northern Pulp. For decades air emissions from the mill have been a problem affecting residents' health and local businesses. Northern Pulp has frequently failed stack emission tests. The new treatment proposal would add additional air emissions to an already bad situation.	Individual Public Comment	NPNS Power Boiler regulatory tests have been within operating permit limits - no exceedances - since June 2017. Significant investment and operating training has occurred leading to the consistent operation that has reduced NPNS environmental footprint. Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data. Ambient monitoring conducted in the region has also demonstrated compliance with ambient air quality regulations
Atmospheric Environment	I would like to address the PM2.5 levels as well, seeing as how we do not have equipment that is properly monitoring or giving a cut off to these levels and how this is allowed to continue to be poisoning the surrounding area with known dangerous chemicals. Why is it that Northern Pulp quoted many of their statements to a pulp mill that never was up and running in Tasmania? Again, how is this allowed to be presented to your level when this knowledge is false and not fairly represented for data collection?	Individual Public Comment	Refer to section 6.3 for comments concerning an ambient air monitoring plan.
Atmospheric Environment	I'm concerned about burning the collected sludge How is this safe? Do the boiler get and stay hot enough?	Individual Public Comment	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	I'm confused about why the flocculated and dried sludge would be sent to the Bark Boiler. Bearing in mind that Air Emissions are a huge concern here, why not compost the sludge for agricultural or even forestry fertilizer. Local fish waste could be mixed into it as well. Would there be a toxicity problem with this idea?	Individual Public Comment	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	Is there any chance if this place isn't excavated properly, that any mercury that is on site could seep into the sludge and end up burned in the power boiler?	Individual Public Comment	Monitoring will be conducted as part of construction. Contingency plans will be in place to address contaminant if identified.
Atmospheric Environment	It would be a good idea to do some quick nest surveys for those barn swallows, as their nests might be in existing structures near the ETF footprint. If that is the case, the construction phase should avoid conducting work during the nesting season, to avoid displacing the birds or interrupting their foraging patterns through excess noise and emissions.	Individual Public Comment	Breeding bird surveys were undertaken at the ETF property in 2018. NPNS has committed to meeting the requirements under the Migratory Birds Convention Act including avoiding clearing during the nesting season or as advised by regulatory authorities.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Atmospheric Environment	Negative effects for emissions from burning the sludge are unclear. There must be a thorough analysis of what will be burned, the by-products, the precipitates and the potential health effects before adding to our air.	Individual Public Comment	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	Northern Pulp is proposing to burn the sludge. They have disclosed what they expect in the air emissions when the sludge is burned. However, they also state they will not really know until the system is operational. I am concerned about the chemical and heavy metal concentration in the sludge being burned. Northern Pulp has a terrible history of at least 14 times they did not pass air quality tests. Furthermore, when they have failed air quality tests they are not shut down. They continue to operate. In the meantime residents have been exposed to cancer causing chemicals.	Individual Public Comment	Emissions that are not, or can not be, measured at this time are calculated using engineering principles, published emission factors for comparable source types, as well as published emissions from comparable operations. These resources are used to calculate the emissions for the project, which is standard practice. Confirmatory measurements, where warranted, can be conducted during operation to confirm the calculations. Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	Northern Pulp notes that they have achieved 80-99% reduction within the mill of "mill-wide particulate emissions, odorous emissions, and boiler particulate emissions", yet in spite of this, the residents of and visitors to Pictou (and within many kilometres of the town) still note skin, respiratory and sensory symptoms.	Individual Public Comment	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	Northern Pulp proposes to burn the sludge captured the newly proposed treatment process in their boilers. The levels of toxicity and odour will be worse.	Individual Public Comment	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	Northern Pulp states that it plans to burn large volumes of sludge from their new wastewater treatment system in the existing power boiler. This power boiler has exceeded emission limit levels in the past according to test results posted on Northern Pulp's website and does not have a precipitator as is required by other jurisdictions. It is reasonable to conclude that burning toxic sludge in a boiler with filtration issues could adversely affect air quality. Pictou County already has some of the highest rates of cancers in the country.	Individual Public Comment	NPNS Power Boiler regulatory tests have been within operating permit limits - no exceedances - since June 2017. Significant investment and operating training has occurred leading to the consistent operation that has reduced NPNS environmental footprint. Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data. Ambient monitoring conducted in the region has also demonstrated compliance with ambient air quality regulations
Atmospheric Environment	Northern Pulp tried to discredit the findings that showed we have elevated levels of VOCs while trying to pass the blame off on a combination of Michelin and NSP Trenton. I found it interesting that the EA found it not credible because the study to which they referred went with "a statistical evaluation of ambient data in correlation with wind direction, without further site specific investigation" yet the EA surmised that the VOCs may have come from other sources like "transportation sources, or other industrial sources like the Michelin Tire plant or the Trenton coal-fired power plant, presumably all sources of VOC emissions to some degree." The EA also stated that VOCs had elevated levels when the prevailing winds were from the northeast of the mill. Given the locations of Michelin (to the west) and NSP Trenton (to the south) it would seem that there must be more validity to the data collected in the paper by Hoffman et al. than the 'presumption' that this EA submission is making. At the very least, it strengthens a case for having continual emissions monitors on not only Northern Pulp's stacks but possibly those of Michelin and NSP Trenton as opposed to making presumptions and allowing elevated levels of VOCs to continue based on the failed logic that, since you can't tell whether it's one or all three of the main sources of air pollution in the county, it doesn't require further investigation.	Individual Public Comment	Refer to section 6.1 for comments concerning potential air contaminants.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Atmospheric Environment	Now my next few points of concern are with the burning of the sludge and what will be taken out of the new effluent treatment system to be burnt in there power boiler and sent out into the air - the power boiler that does not have a precipitator! This is the same power boiler that failed emissions tests in 2015, 2016 and 2017. As stated in a news article in the The NG News, dated Jan 22 2018, the reason for the failure of the emission limits was because of what was burned in it - "These included changes to what went into the boiler, and how it was burned, which led to more efficient burning of that material and fewer particles leaving the boiler. One significant improvement was to reduce the amount of sawdust and shavings, and to increase the size of the bark put into the power boiler. That had a significant improvement on performance" If this boiler is what is going to be burning the sludge it concerns me that this was not addressed fully. How they will get there mixture right to pass any emission limits test? How will the particulate matter be taken out of the air? I feel Nova Scotia Environment needs more information on this matter to insure public health is not at risk.	Individual Public Comment	NPNS Power Boiler regulatory tests have been within operating permit limits - no exceedances - since June 2017. Significant investment and operating training has occurred leading to the consistent operation that has reduced NPNS environmental footprint. Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	On page 45, (Section 5.2.2.8 paragraph 4) they state that the sludge from the effluent will be burned in their existing power boiler. My God! The sludge will go into the air and everyone will breath it! And the power boiler is a malfunctioning piece of aged machinery. They state that this sludge "partially displaces the use of fossil fuel." They won't use a closed loop to save on water consumption, but make a feeble attempt in this statement to make it seem like they are conservation minded by reducing their use of fossil fuel.	Individual Public Comment	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	On page 505 of the proposal, it is stated that "Stantec (2019) also reported that ambient air monitoring data from 2015, 2016, and 2017 showed no exceedances of the applicable Nova Scotia regulatory AQC for the air contaminants monitored under the NPNS approval to operate." This does not appear to be a true statement. Attached is a Source Emissions Test Results for Winter 2015 and Summer 2015. Both tests were conducted by Stantec and the results were found on NSE's website. The test results show exceedances for both the recovery boiler and the power boiler as outlined in the company's IA.	Individual Public Comment	Ambient air measurements are measurements taken at ground-level at the ambient monitoring stations. No exceedances were reported at these locations. Source emissions are measurements taken at the stack.
Atmospheric Environment	The current state of air quality and odours produced from the plant have had a negative socio-economic impact on the community. In my tourism operation we have lost long term guests who had to leave because of poor air quality. We have lost potential group bookings and weddings because of the air quality on the day of planning visits and tours. The local town has lost residents and potential investors because of the air quality. There is no current study on what the economic impact the poor air quality and odour produced by mill has had on tourism industry and economic development in the community over the last 50 years. This is of concern to me.	Individual Public Comment	Refer to section 6.1 for comments concerning potential air contaminants.
Atmospheric Environment	The EA states that they won't know the effluent's chemical makeup until after the project is complete. If that is the case, how can they know the chemical makeup of the sludge that they plan to burn in their power boiler? What will that chemical makeup be once it becomes airborne? How will that increase the level of VOCs in the area?	Individual Public Comment	Refer to section 6.1 for comments concerning potential air contaminants.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Atmospheric Environment	The facility is expected to be in compliance with the provincial and federal air quality criteria for both existing and future conditions with the new ETF operational. Follow up and monitoring using Northern Pulps current regulated source emission testing program will verify the environmental effects predictions. The blaring question in the above statement is who will be doing the monitoring of emission testing? As has been historically proven NPNS nor the government can be trusted to monitor or truthfully report test results within a timely manner. Again, the term is expected to be in compliance is used. This is not a certainty so the legacy of NPNS polluting our air beyond acceptable levels will simply be compounded.	Individual Public Comment	Refer to section 6.3 for comments concerning an ambient air monitoring plan.
Atmospheric Environment	The mill wants to burn the sludge in the power boiler. This is the same boiler that has failed stack emissions tests Northern Pulps failed stack test happened the week of June 6 at a reading of 224, 50 over allowable levels although I understand from NP proposal that A frequent exceedance is defined as one that occurs more than 1 of the time. On page 140 under section 8.1.2.2 the proposal states that there have been no exceedances of maximum allowances. This is based on their own assessment.	Individual Public Comment	NPNS Power Boiler regulatory tests have been within operating permit limits - no exceedances - since June 2017. Significant investment and operating training has occurred leading to the consistent operation that has reduced NPNS environmental footprint. Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	The new proposal also shows a plan to burn contaminated sludge in power boiler which raises new threats to air quality. The waste sludge contains toxins which would be released through the stacks of the mill's power boiler. The proposal is to "dewater the sludge prior to mixing it with bark and other wood waste for combustion in the mill's power boiler." This is the same power boiler that is currently and repeatedly failing stack emissions tests. Problems with air quality from mill emissions have been documented for years. Lack of appropriate monitoring and enforcement already puts area residents at risk. Now, Northern Pulp is considering adding sludge containing toxins to the combustion mix, increasing health risks from NP's air emission	Individual Public Comment	Refer to Section 6.1 for comments concerning potential air contaminants. The updated air monitoring plan is provided in Section 6.3.
Atmospheric Environment	The Northern Pulp treatment system proposal includes a plan to burn the waste sludge. The waste sludge contains toxins which would be released through the stacks of the mill's power boiler. The proposal is to "dewater the sludge prior to mixing it with bark and other wood waste for combustion in the mill's power boiler." Airborne emissions of the mill are a significant health concern to me and I can find no evidence that Northern Pulp's proposal mitigates those pollutants.	Individual Public Comment	NPNS Power Boiler regulatory tests have been within operating permit limits - no exceedances - since June 2017. Significant investment and operating training has occurred leading to the consistent operation that has reduced NPNS environmental footprint. Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	The Northern Pulp treatment system proposal includes a plan to burn the waste sludge. The waste sludge contains toxins which would be released through the stacks of the mill's power boiler. The proposal is to "dewater the sludge prior to mixing it with bark and other wood waste for combustion in the mill's power boiler." This is the same power boiler that is currently and repeatedly failing stack emissions tests. Problems with air quality from mill emissions have been documented for years. Lack of appropriate monitoring and enforcement already puts area residents at risk. Now, Northern Pulp is considering adding sludge containing toxins to the combustion mix, increasing health risks from NP's air emissions.	Individual Public Comment	NPNS Power Boiler regulatory tests have been within operating permit limits - no exceedances - since June 2017. Significant investment and operating training has occurred leading to the consistent operation that has reduced NPNS environmental footprint. Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Atmospheric Environment	The Northern Pulp treatment system proposal includes a plan to burn the waste sludge. The waste sludge contains toxins which would be released through the stacks of the mills power boiler. The proposal is to odewater the sludge prior to mixing it with bark and other wood waste for combustion in the mills power boiler. This is the same power boiler that is currently and repeatedly failing stack emissions tests. Problems with air quality from mill emissions have been documented for years. Lack of appropriate monitoring and enforcement already puts area residents at risk. Now, Northern Pulp is considering adding sludge containing toxins to the combustion mix, increasing health risks from NPs air emissions.	Individual Public Comment	Refer to Section 6.1 for comments concerning potential air contaminants. The updated air monitoring plan is provided in Section 6.3.
Atmospheric Environment	The proposal has toxic sludge being burned on site in a power boiler that is inconsistent with proper disposal of waste.	Individual Public Comment	The sludge will be combusted in the power boiler. Sludge is considered as a biofuel and will help to reduce GHG by using less natural gas.
Atmospheric Environment	The proposal of a "new" program on the mill site for dealing with solids does not sit well with us as we wonder how they will be handled in the short and long term. Will burning some of the remaining solids add to the air pollution we are now exposed to daily? Will they end up in the effluent as sludge and thither pollute the waterways in Caribou Harbour? Will they be buried and how will that affect the health of individuals who live in the area and work on site? The trust is thin on this issue as you can imagine.	Individual Public Comment	NPNS Power Boiler regulatory tests have been within operating permit limits - no exceedances - since June 2017. Significant investment and operating training has occurred leading to the consistent operation that has reduced NPNS environmental footprint. Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	The proposal shows the plan to burn the toxic sludge in the power boiler and air emissions are already an issue today.	Individual Public Comment	Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	The proposal shows the plan to burn the toxic sludge in the power boiler. Air emissions are an issue today and health issues are already known to be above provincial averages today in Pictou County.	Individual Public Comment	NPNS Power Boiler regulatory tests have been within operating permit limits - no exceedances - since June 2017. Significant investment and operating training has occurred leading to the consistent operation that has reduced NPNS environmental footprint. Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data. Ambient monitoring conducted in the region has also demonstrated compliance with ambient air quality regulations
Atmospheric Environment	The proposal shows the plan to burn the toxic sludge in the power boiler. That we know is not working properly and air emissions are an issue today.	Individual Public Comment	Refer to Section 6.1 for comments concerning potential air contaminants. The updated air monitoring plan is provided in Section 6.3.
Atmospheric Environment	The proposal to burn the dewatered sludge in the power boiler is also of significant concern. Issues with the power boiler, first noted to be problematic in 2006, have never been addressed. Particulate matter emissions have been exceeded from that aging stack on numerous occasions. Not knowing what chemicals will be in the sludge, coupled with a glaring lack of properly functioning pollution-abatement equipment in the stack that will be burning it, could spell much worse air quality for local residents.	Individual Public Comment	NPNS Power Boiler regulatory tests have been within operating permit limits - no exceedances - since June 2017. Significant investment and operating training has occurred leading to the consistent operation that has reduced NPNS environmental footprint. Updated air dispersion modelling was conducted in 2019 and this information is provided under Section 6 of the Focus Report. This updated modelling includes expanded emissions inventory data.
Atmospheric Environment	The sludge will be used as a fuel for the NPNS power boiler. A power boiler that has a history of not working properly, and now wanting to burn unknown effluent	Individual Public Comment	NPNS Power Boiler regulatory tests have been within operating permit limits - no exceedances - since June 2017. Significant investment and operating training has occurred leading to the consistent operation that has reduced NPNS environmental footprint.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Atmospheric Environment	The use of "estimates" of current emissions at Table 8.1-5 is inadequate. The use of "estimates" at Table 8.1-6 is therefore, also unacceptable. Note that the "estimated" values are then utilized as baseline in the modeling noted at page 146: "Ground-level concentrations (GLC's) of air contaminants were predicted for two modeling scenarios...".	Individual Public Comment	Emissions that are not, or can not be, measured at this time are calculated using engineering principles, published emission factors for comparable source types, as well as published emissions from comparable operations. These resources are used to calculate the emissions for the project, which are referred to as "estimates", which is standard practice. Confirmatory measurements, where warranted, can be conducted during operation o confirm the calculations
Atmospheric Environment	There are no monitoring stations located in many of the populated areas that are susceptible to the pollution coming from the mill - "Findings suggest that Granton's NAPS site is not positioned to accurately represent ambient levels of toxicity in PC." And the study concludes that NSE should install the proper monitoring stations such as in Pictou where there is "higher residential exposure". This should also include places like New Glasgow, Trenton, Pictou Landing, Westville, Stellarton and other areas around the County where the population is being exposed.	Individual Public Comment	Refer to Section 6.1 for comments concerning potential air contaminants. The updated air monitoring plan is provided in Section 6.3.
Atmospheric Environment	There is also the consideration of the quality of air. This part of the province has suffered enough regarding this – every citizen should be able to open their windows on a nice warm day and the reality here is that we can't. This should not be the case in Nova Scotia. It has greatly affected the businesses in our town – many who have left since visitors want no part of this.	Individual Public Comment	Refer to section 6.3 for comments concerning an ambient air monitoring plan.
Atmospheric Environment	We do not know the ingredients. They will start burning contaminated sludge without a thorough study of emission concerns, the environment, the fisheries, sea life and tourism. All are at risk the strait can freeze so how will the warmth flow impact lobster spawning grounds. Much further studies need to be done.	Individual Public Comment	Refer to section 6.1 for comments concerning potential air contaminants. The Project will meet environmental regulations and requirements, and the NPNS will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment.
Atmospheric Environment	With the new EIT, sludge is to be dewatered and burned in the power boiler. This will cause an increase of about 5% more pollutants in coming from the power boiler. Northern Pulp has only managed to stay under the emissions limits as lain out in their Industrial Approval for just over a year now which only spans six tests. Again, a change like this with a company that has a reputation for failing its emissions tests would warrant Continuous Emissions Monitoring system in place. Page 148 even has Northern Pulp stating that they believe there should not be increased monitoring despite the adding of a new element to what they are burning in their power boiler. This demonstrates that they don't want more scrutiny on part of their process that has failed in the recent past.	Individual Public Comment	Refer to section 6.3 for comments concerning an ambient air monitoring plan.
Effects of the Environment on the Project	Missing Studies Analysis or engineering study of the impacts of ice scour on buried HDPE pipe;	EcoJustice and Friends of the Northumberland Strait	Refer to section 2.2 of the Focus Report for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Effects of the Environment on the Project	The EA submission, although lengthy, lacks critical information, or sufficient detail, in crucial areas such as: (i) Analysis or engineering study of the impacts of ice scour on buried HDPE pipe or diffusers;	EcoJustice and Friends of the Northumberland Strait	Refer to section 2.2 of the Focus Report for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Effects of the Environment on the Project	the ice, storms and other unpredictable marine conditions will hinder NPNS's ability to monitor its pipe and diffuser for damage and leaks, and to investigate and repair spills in the marine environment. NPNS does not explain how it will conduct its monitoring and spill response activities in the presence of ice – in fact, its EA materials do not even acknowledge that ice may be an issue when it comes to monitoring and responding to spills. Likewise, the EA materials do not contain an examination of the particular effects of a prolonged and inaccessible effluent spill, at any point along the pipeline, or within the marine area under ice cover. Despite the lengthy ice-bound periods during the winter, and the significant possibility of damage by ice or other forces during the winter, NPNS provides no explanation of what could be done to protect the marine environment of Caribou Harbour or the Caribou Channel, before an opportunity arises to access and repair the damaged infrastructure.	EcoJustice and Friends of the Northumberland Strait	Refer to section 2.2 of the Focus Report for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour. Also refer to the Environmental Planning and Mitigation Measures document prepared as submission Appendix A2.1-2.
Effects of the Environment on the Project	The role of climate change, and how it might interact with the project and impact consultant predictions, is likewise absent from the discussion	EcoJustice and Friends of the Northumberland Strait	Climate change is addressed in Addendum 3 of the Focus Report.
Effects of the Environment on the Project	“Average sea surface temperature in May to December in the Northumberland Strait (1986-2012) are shown in table” (Pg. 338). The discussion around sea surface temperature draws attention to the changing ocean temperatures as a result of climate change. The Gulf of St. Lawrence has been identified as an area of rapid coastal deoxygenation by Claret, M. et. al (2018). Their analysis shows increased surface water temperature, increased salinity and decreased oxygen saturation. Changes to any of these variables in isolation can cause stress on important commercial species, changes to all three has the potential for synergistic effects and should not be overlooked. The addition of hot, fresh water to the Northumberland Strait for an extended period should not be so easily passed by in this environmental assessment. Recommendation 2a: This data is not up to date but it is available. Care should have been taken to include up to date information. This represents a gap in scientific data. Recommendation 2b: Fisheries in the Northumberland Strait take place throughout the entire water column. Surface, mid-water and bottom water therefore bottom water analysis is required. This is a gap in scientific data that is essential to understanding the changes that will take place going forward.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Additional information on the receiving water and modelling of the dispersal of the effluent are provided in the Focus Report. Additional baseline surveys were completed in 2019 and those results are also presented in the Focus Report.
Effects of the Environment on the Project	More work should have been done to look at the effluent remaining in the Northumberland Strait for the long term. This would also take into account the changing climate (increasing temperature, salinity and decreasing oxygen saturation).	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Additional information on the receiving water and modelling of the dispersal of the effluent are provided in the Focus Report.
Effects of the Environment on the Project	The organizations feel strongly that this environmental assessment, submitted by Northern Pulp, is insufficient and it should have a more rigorous assessment. This needs to include field work and research from an ecosystem perspective with consideration given to the climate change currently being documented in the Gulf of St. Lawrence.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Additional baseline surveys were completed in 2019 and the results of those surveys are provided in the Focus Report. Also refer to the Environmental Planning and Mitigation Measures document prepared as submission Appendix A2.1-2.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	a mixing zone may not be used at all unless it satisfies important preconditions or requirements. These requirements are not discussed in NPNS's EA Submission. When they are considered, it becomes apparent that the proposed, or any, mixing zone is not appropriate at the outfall location proposed by NPNS and does not comply with CCME or NSE direction.	EcoJustice and Friends of the Northumberland Strait	Refer to section 3.3 for comments concerning effluent discharge parameters.
ETF Design Concerns	Caribou Channel is not an artificial 100m dead zone which can be continuously loaded with effluent without consequence. The NP submission is based on an incorrect standard.	EcoJustice and Friends of the Northumberland Strait	Refer to section 3.3 for comments concerning effluent discharge parameters.
ETF Design Concerns	concerns with respect to NPNS's ability to adequately monitor the proposed ETF and to respond to accidents that could result in the unplanned release of treated or untreated effluent or other hazardous substances into the environment.	EcoJustice and Friends of the Northumberland Strait	Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
ETF Design Concerns	If an oxygen delignification system will be included as part of the new ETF, then NPNS must address this component as part of its project description as per subsection 9(1A)(b)(ix) of the EA Regs. If not, then NPNS must clarify that the KSH Technology Selection Summary does not accurately reflect the components of the proposed ETF.	EcoJustice and Friends of the Northumberland Strait	Refer to Addendum 1.0 for comments relating to O2 delignification.
ETF Design Concerns	It is unusual to rely on a report from a mill which process different wood products and which discharges effluent into an entirely different ocean on the other side of the world, with different dynamics, temperatures etc., but not to provide a report summarizing and analyzing data from the actual mill that will be producing the effluent. As well, as has been noted elsewhere, <sup>54</sup> the mill being analysed by the Toxikos report was never built <sup>55</sup> , so there is no way to compare those predictions with later actual results to determine the degree of accuracy of the predicted outcomes.	EcoJustice and Friends of the Northumberland Strait	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology).
ETF Design Concerns	Missing Studies - Studies showing the nature and frequency of process interruptions and disruptions, leaks and spills at the NPNS facility and the impacts of same on effluent composition	EcoJustice and Friends of the Northumberland Strait	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
ETF Design Concerns	No information is provided about how the effluent composition may vary due to system disruptions, black liquor spills, equipment failures or a failure of the proposed ETF itself.	EcoJustice and Friends of the Northumberland Strait	Refer to section 3.3 for comments concerning effluent discharge parameters.
ETF Design Concerns	Nova Scotia Environment discussed the requirements for a mixing zone in correspondence to NPNS dated June 14, 2017. <sup>96</sup> The letter says, in part: A mixing zone is defined as an area of water contiguous to a point source discharge. A mixing zone is, under no circumstances, to be used as an alternative to reasonable and practical treatment....it is only one factor to be considered in establishing effluent requirements. ....As a general principle, the use of mixing zones should be minimized and limited to conventional pollutants. The mixing zone principle does not apply to hazardous wastes.... Mixing zones also do not apply to bio-accumulative or persistence [sic] substances and despite the allowance of a mixing zone, effluent shall not be acutely toxic. ...Mixing zones cannot interfere with other water uses such as...active fisheries.... <sup>97</sup>	EcoJustice and Friends of the Northumberland Strait	Refer to section 3.3 for comments concerning effluent discharge parameters.
ETF Design Concerns	Other potential alternatives or treatments, including evaporation, were never examined in any meaningful way. Discharge of effluent into the Strait was the only alternative given any serious consideration.	EcoJustice and Friends of the Northumberland Strait	Addressed in EARD.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	The EA submission, although lengthy, lacks critical information, or sufficient detail, in crucial areas such as: c) Studies showing the nature and frequency of process interruptions and disruptions, leaks and spills at the NPNS facility and the impacts of same on effluent composition; d) Studies showing that the proposed ETF, which is not yet constructed, can and will in fact reliably and consistently discharge effluent which will meet any particular parameter, or whether it will meet the parameters which form the basis of the discussion in the EA submission:	EcoJustice and Friends of the Northumberland Strait	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology).
ETF Design Concerns	The NPNS Submission and the receiving water studies on which it relies are based, in large part, on the misapplication of the concept of a 100 metre "standard mixing zone", within which effluent components are projected to dilute to "background levels." In reality, the mixing zone that is proposed completely fails to comply with the basic requirements of a mixing zone, no matter what standard is applied. A mixing zone is entirely inappropriate given the realities of the receiving environment of Caribou Channel and Caribou Harbour.	EcoJustice and Friends of the Northumberland Strait	Refer to section 3.3 for comments concerning effluent discharge parameters.
ETF Design Concerns	In the event of black liquor or other chemical spills into the proposed new effluent treatment system, the biological agents will be killed and the system will stop functioning as it's supposed to. In the registration document, NPNS says it plans to build a 35 million liter raw effluent spill basin that, assuming optimum conditions, will be sufficient to contain 10 to 13 hours of effluent diversion in the event of process upsets (pg. 42). That means only half a day's worth of effluent can be contained while they try to fix the problem. But process upsets often take much longer to fix than half a day. Therefore the risk of potentially large volumes of untreated effluent by-passing the new effluent treatment system and flowing directly out into the marine environment is very high as their proposed spill basin will be too small to contain effluent volumes greater than half a day's output while NPNS works to restore the biological agents to sufficient levels to function again.	Ecology Action Centre	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
ETF Design Concerns	Consideration of the non-biodegradable organic fraction within the effluent should be given, with more specific information on components in effluent that contribute to non-biodegradable fraction of COD, and any other efforts that could be considered in the pulp mill process design to lower COD in the mill effluent prior to biological wastewater treatment.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology).
ETF Design Concerns	Environment and Climate Change Canada has proposed updates to the Pulp and Paper Effluent Regulations (PPER), to account for changes in the pulp and paper industry, as well as to address findings from EEM studies indicating that the PPER do not adequately protect fish, fish habitat, and the environment (ECCC, 2017). NPNS must address whether or not the effluent from the project will meet the requirements of the proposed updates to the PPER.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 4.2 for comments concerning the receiving water study.
ETF Design Concerns	More detail should be supplied on (1) what "key performance indicators" will be monitored on daily basis, and (2) what monitoring/testing will be conducted on the influent into the ETF; specifically, what water quality and/or operational parameters will be part of this monitoring/testing framework.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Monitoring of operations will be conducted in accordance with NSE Industrial Approval requirements.
ETF Design Concerns	More information needs to be provided on metal concentrations in the current ASB effluent (Point C) and metal concentrations expected to be found in the effluent of the proposed ETF.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology).

Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	More information should be provided on the data collected in the lab trials conducted in Fall 2018 on the NPNS effluent and site visits to the two Kraft mills in Sweden using BAS™ technology in terms of specific water quality data (BOD, TSS, P, N & COD) and relevant regulations (current and proposed).	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology).
ETF Design Concerns	NPNS fails to demonstrate whether the lack of "polishing" effect and reductions in TSS, BOD and COD currently achieved by the settling time in Boat Harbour will cause significant environmental impacts, or whether the "polishing" and TSS, BOD and COD reduction effect will be achieved through other means in the proposed ETF.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
ETF Design Concerns	NPNS must clearly outline how the proposed effluent treatment facility will be designed and operated in a way that will mitigate the potential for similar environmental impacts to occur.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	The Focus Report addresses items that were raised with respect to the current projects and mitigation of potential effects.
ETF Design Concerns	The EA should examine the possibility of horizontal directional drilling (HDD) to facilitate the placement of the pipe into the Northumberland strait. HDD could reduce the risks of in water works that could significantly impact fish and benthic communities	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	The Environmental Management Plan and the Environmental Protection Plan must be completed and circulated for review and consultation with stakeholders prior to the project being approved.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.4 for comments concerning the Environmental Effects Monitoring (EEM) Program.
ETF Design Concerns	the Environmental Protection Plan must address prevention and emergency response related to horizontal directional drilling.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	If carried forward in pipeline design, Horizontal Directional Drilling will be included in the Environmental Protection Plan.
ETF Design Concerns	According to Northern Pulp's figures, during the time in Boat Harbour Basin, total suspended solids TSS and biochemical oxygen below the proposed water quality standard of The Stantec Preliminary Receiving Waters Study, August 2017, illustrates the same lack of dispersion. Treated effluent has never flowed directly into the deeper waters of the Strait. From its discharge at the shoreline, after 20-30 days in Boat Harbour Basin, tides and currents further break down, dilute and settle contaminants before they reach the deeper waters of the Strait. It is misleading to imply that effluent from the proposed new system pumped directly into the fishing grounds of the Strait within 24 hour that contains almost 1000kg of solids will have the same impact as the effluent which presently enters the Strait at the shore edge, hugs the shore and recirculates in and out of Pictou Harbour. Further to this, the same proposal was rejected in 1994 for the same concerns!!	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
ETF Design Concerns	If there is a chance that the pipeline could break and devastate water sources and the environment, thereby creating a non-reversible condition, with only partial promise that the effluent will not harm the environment it is not ANTICIPATED that the effluent plume will not be visible when it reaches the water surface, this is more than non-significant for those who could be impacted. The report states that effluent will meet PPER requirements, but this does not give me confidence when I drink water based on the Guidelines for Canadian Drinking Water Quality GCDWO.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	<p>2. what is the hydraulic residence time of water parcels once they enter the Northumberland Strait, both under existing and modified e.g. post pipeline hydrographic regimes? In other words, will the effluent be diluted by "fresh" seawater, or will the water in the Northumberland Strait slosh back and forth with the tides, leading to effluent mainly being diluted by already diluted effluent? While the numbers given in Fig. 70 in Galbraith et al. 2017 suggest a reasonable flow through the Northumberland Strait under the present hydrographic regime, the 3-month current vectors in Fig. 67 and 68 suggests sluggish water exchange. According to the documents provided, a dilution factor of ~100 is expected to be reached within 20 meters Table 6.7-1, p. 115. Into this diffusion area an average inflow of ~73 m<sup>3</sup> s<sup>-1</sup> x 63 600 m<sup>3</sup>/ 86 400 s would be needed to reach the stated dilution factor, and an average outflow of ~74 m<sup>3</sup> s<sup>-1</sup> x 63 600 m<sup>3</sup>/ 86 400 s would be produced. If the diffuser pipe is 50 m long, and we add a perimeter of 20 m around it, the resulting surface projected circumference around the 100:1 diffusion area is about 226 m. I do not have access to detailed bathymetry, but assuming an average depth of 20 m for this circumference, the area through which both out and inflows would have to pass is at most 4512 m<sup>2</sup>. If one assumes that half this area is taken by the inflow, and half by the outflow, vertically averaged current speeds set up by the dilution process would be on the order of 3.2 cm s<sup>-1</sup> at the 100:1 perimeter in the case of isotropic in/outflow. However, due to the topography surrounding the diffuser area, anisotropy in the directions of the in- and outflows can be expected, so this is a lower bound estimate, and real current speeds set up by the diffusors are likely to be much higher. For organisms with pelagic larvae meroplankton, such as bivalves and crustaceans, the currents and circulation patterns set up by the diffuser may lead to local changes in recruitment patterns e.g. where will larvae be transported, where is the source of dilutant water. Also fish with pelagic larvae for instance herring may be affected by changes in the current fields may affect local transport/retention and also turbulence levels, which affect encounter rates between prey and predators. In order to assess</p>	Individual Public Comment	An updated receiving water assessment is provided in Section 4.2 of the Focus Report.
ETF Design Concerns	<p>A monitoring system to detect leaks needs to be detailed in their proposal as well as any other monitoring systems.</p>	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	<p>A separate point I would like to bring up is the monitoring of the pipe and its wellbeing. My main point being that how will the pipe be monitored? They claim that the accidental release of effluent can occur. There is an example of this in the fall of 2018 when a ruptured pipe was discovered by a passerby in the Pictou Landing First Nations area. How can Northern Pulp claim to monitor their systems when a pipe rupture was undetected on land, let alone if the pipe was buried in the sea floor. I feel as though this risk needs to be better assessed because the potential for effluent to leak throughout the pipeline is very high. This applies for both the sections, land and ocean. This can pose problems for the fisheries and the marine ecosystem in the marine environment, but just as big a problem on land as the pipe is running right through the town of Pictou's watershed</p>	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	A separate point I would like to bring up is the monitoring of the pipe and its wellbeing. My main point being that how will the pipe be monitored? They claim that the accidental release of effluent can occur. There is an example of this in the fall of 2018 when a ruptured pipe was discovered by a passerby in the Pictou Landing First Nations area. How can Northern Pulp claim to monitor their systems when a pipe rupture was undetected on land, let alone if the pipe was buried in the sea floor.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	After you get across the causeway, you are moving the pipe across the town of Pictou's watershed. The construction of and the use of an effluent pipeline puts Pictou's source of water at risk. The town is in the process of its own major project to finally secure drinkable water for the citizens who have not been able to have drinkable water. Whether the risk arises during the construction or 50 years down the road, as mentioned in my opening preamble, Northern Pulp does not have a demonstrated history of showing either proper maintenance of pipelines nor monitoring for when damage of pipelines arise. This is a risk that is not worth taking.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	Although very little info has been released by Northern Pulp on this, the latest proposed route show the effluent pipe going through the Pictou Town water supply. Should this pipe be compromised like it has multiple times with the current waste pipes, the Pictou Town water supply would become contaminated.	Individual Public Comment	Information on the measures to reduce or avoid the risk of contaminating potable water supplies, as well as the proposed methods to monitor for any potential effects are provided in Section 5.2 of the Focus Report.
ETF Design Concerns	An oxygen delignification system would only improve the COD level from the bleach plant by 40%. So that's 1/3 of 40% which equals 13.333%. At best an oxygen delignification would only reduce COD levels at NP by 13.3333 %	Individual Public Comment	The potential addition of oxygen delignification is discussed in section 2.4 of Addendum 1. Oxygen delignification will be an addition to the current proposed ETF facility.
ETF Design Concerns	Another area of concern is with the transition in effluent systems from the current Aerated Stabilization Basin treatment (ASB) system to the proposed biological Activated Sludge Treatment (AST) system. While these newer systems have shown they can provide higher HOD reduction efficiency, they are more susceptible to settling issues and disruption to the biological community that is central to this effluent treatment process. So called biological upset can occur regularly if not carefully managed by experienced operators. Therefore, this new system will require more highly trained operators and more testing to maintain effluent below legally required levels. The EA filing does not address these challenges associated with the changeover in process. The filing documents do not identify what testing will occur to ensure that the new system will be working efficiently and within desired parameters prior to the switch over from the ASH system nor the mechanisms that will be put in place to ensure proficiency of their operators and the operational procedures for the new facility. There is also a lack of information concerning procedures for detecting and mitigating known issues such as biological shock, bulking, or for other failures within the treatment facility or within the mill. Failures in any one of these areas could lead to untreated effluent being pumped into Northumberland Strait, relying only on voluntary transparency by the proponent and the federally mandated monthly testing to detect the issue. This is a significant failure in the EA. More information is required before an informed decision can be reached on this project.	Individual Public Comment	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology).

Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	As a resident of Pictou I am concerned about the proposed pipe extending through our watershed area. I have the following questions: What will happen when this pipe leaks? What contingency plan will be put in place for the eventuality of a leak? What effect will a leak have on our health? What monitoring system will be put into place to detect a leak? Past effluent leaks from the Northern Pulp Mill to Boat Harbour have been detected by local residents. That is unacceptable. My lives within a kilometre of this proposed pipe and she uses a well. How will her water supply be affected when there is a leak?	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	As for a possible failure in the system where an accidental occurrence happens one must realize with the length of the pipe now extended to over fifteen Kilometers, that means there could be 100s of thousands of liters of Effluent that could be above legal allowable limits in the pipe. I see no plan in place to have this Effluent safely removed before it ends up in the Strait especially in winter. So just how would an accident of this nature be dealt with? Also if there is a failure in any section of the underwater pipe or it's Diffusers during the Winter when Ice is in the Strait, how is that to be rectified? Does the Northern Pulp Shutdown until the Ice is gone and the pipe can be repaired.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	At this time, effluent chemistry characteristics including the specific substances present in treated effluent and their anticipated concentrations will not be known with certainty until the project is operational. Some other current areas of uncertainty include limited recent or current baseline environmental media and marine food item chemistry data	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
ETF Design Concerns	Based on data there is enough information to conclude that the new ETF would be worse than the old system because of the elimination of the basin. This elimination would create more toxins reaching the Northumberland Strait.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
ETF Design Concerns	Beyond the Trust Issue is the Fail Safety of this new AST System. There are only 9 Hours backup for any industrial activities that break down, then the whole untreated raw pulp effluent is dumped into the ocean. Even heavy rains may affect this ability to protect Caribou Harbour. And that figure represents 70-80 million liters of hot contaminated fresh water effluent daily containing pulp chips.	Individual Public Comment	The new effluent treatment facility will be on-site which will see only treated effluent leaving the NPNS facility after the new system is operational. The system used automation and monitoring obtain information on operational issues. Information on the proposed methods to monitor for any potential effects are provided in Section 5.2 of the Focus Report.
ETF Design Concerns	Born and raised in Pictou I have 3 main concerns : 1 No where in this EA does it state Northern Pulps proposed pipe will run directly through the Town of Pictous watershed. Where are the facts of what happens if there was a leak in this area ? The Town of Pictou was NOT consulted on this information.	Individual Public Comment	Information on the measures to reduce or avoid the risk of contaminating potable water supplies, as well as the proposed methods to monitor for any potential effects are provided in Section 5.2 of the Focus Report.
ETF Design Concerns	But an even greater issue is the risk of damage to the pipe itself in the shallow waters of Caribou Harbour. The proposed outfall location is in a "hole" 20 metres deep, in a narrow channel. The depth of the majority of Caribou Harbour, both closer to shore and on the far side of the proposed diffuser location, is from 0 to 8 metres deep. Damage to the pipe before it reaches the diffuser would take place in a shallow area, where sufficient flushing would not occur. The result of damage to the pipe could damage the entire rich ecosystem of Caribou Harbour for many decades. This is not a small possibility, it is a likelihood, according to fishers and a master diver I have spoken with, all of whom have watched the force of ice in the area for years and have made their own submissions to this FA.	Individual Public Comment	Refer to section 2.5 for comments concerning proposed changes to the pipeline construction methodology and other associated pipeline work, related to the potential changes to the marine portion of the pipeline route.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	Currently, Northern Pulp does not have permits for running a pipe through the town of Pictou or the County of Pictou. I do not believe a project should be given the ok until these can be obtained.	Individual Public Comment	Refer to section 2.1 for comments concerning effluent pipeline location, routing and intersecting properties.
ETF Design Concerns	During the open houses a key component that also appears pictured in the EA submission is the Oxygen Delignification system. Consultants said that this would cost about \$70M and be paid for by the mill owners. In the EA it is highlighted in a different colour and it says that it would be built in the future. If this is a key part of the operation to reduce emissions, smell and make the effluent better (which as we covered before, is actually going to be worse) why is it not part of this project? With the length of time it is taking Northern Pulp to get this \$130M project underway where they may not even have to foot the bill, I am concerned that this promised oxygen delignification system will not come to fruition.	Individual Public Comment	Refer to Addendum 1.0 for comments relating to O2 delignification.
ETF Design Concerns	Equipment can fail, pipelines can break. What happens if equipment failure results in contaminated effluent - who is monitoring, how long will it take to find out there is a problem, and will the consequence be immediate shutdown of the mill until there is a remedy?	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	From our research and consultations, we have also identified several other areas of concern that are not adequately addressed in the proponent's EA documents. For example, compared to Boat Harbour, the new treatment facility will reduce the capacity to hold untreated effluent in the event of an emergency from 30 days down to a proponent-estimated 8-12 hours. Although it is known to occur, there is no publicly available information on how often an untreated effluent is required to be held each year and the duration of those periods. Given the size, age, and complexity of the mill, a capacity of only 8-12 hours seems insufficient for operators to identify and rectify problems, or to idle the plant while the problem is being fixed. The filing is also vague on how the proponent is planning to provide real-time monitoring of the effluent and how the company will deal with other emergency issues associated with effluent treatment and containment. Given the current regulations surrounding monitoring of effluent (monthly acute lethality testing) coupled with this uncertainty in monitoring and holding capacity this would mean that untreated effluent could potentially be discharged for a significant period of time before it would be detected and stopped by the proponent or detected by legally mandated monitoring. This is a serious concern. Therefore the holding capacity issue and emergency action plans involving effluent treatment and mill idling need to be addressed within the filing documents in order to properly assess the potential impacts of this project and develop appropriate monitoring and reporting conditions for the facility's operation.	Individual Public Comment	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
ETF Design Concerns	Given that the proposed treatment facility only removes about half of the organic chemicals that will be released into the Northumberland Strait, we need further investigation into the long-term health effects. It is important to note not all of the chemicals present in the effluent are tested or the chemical components of the effluent are fully understood.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
ETF Design Concerns	Given the majority of the pipeline will be buried under 1m of fill or asphalt how will inspection of pipeline condition be conducted? The report indicates visual inspections be conducted.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	I also am concerned with the pipe breaking. The unknown chemicals in the effluent now can reach town water supplies adding further risk to public health.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	I am concerned for the health of the PLFN, the fishing industry, tourism, watersheds for surrounding area, fish/shellfish/larvae.	Individual Public Comment	Concerns are noted. The Project will meet environmental regulations and requirements, and the NPNS will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment. Refer to section 9.2 for comments concerning the Human Health Risk Assessment. Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
ETF Design Concerns	I am unsure how a plastic pipe would be monitored or saved from major ice which is published by studies in the Northumberland Strait for holding true power to destroying large equipment in recent history.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	I am very concerned about the proximity of the pipe route to watersheds for Pictou drinking water.	Individual Public Comment	Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
ETF Design Concerns	I am wondering for planned land use: The town of Pictou (mayor) has publicly stated they will not allow a pipe through their watershed. I am unsure how this plan can continue without the support of a town to allow a construction phase of this nature to occur when the mayor is standing firm and stating "NO" to this pipe proposal.	Individual Public Comment	Refer to section 2.1 for comments concerning effluent pipeline location, routing and intersecting properties.
ETF Design Concerns	I have at least 2 concerns about the pipeline: 1. Will the effluent diffuser set up a new circulation pattern e.g. estuarine circulation that will affect the current flow through the Northumberland Strait? Especially during months of low average flow through NS the necessary inflow to the diffuser is a high proportion of monthly average flow for NS as a whole, suggesting that the diffuser may potentially have a significant effect on larger scale circulation patterns. Has there been any assessment of the effects of the diffuser on the current field outside of the immediate vicinity of the diffuser? What magnitudes of changes in the present average current field is expected in the wider Northumberland Strait?	Individual Public Comment	This has been assessed and a discussion on the effects to the receiving water body are available in Section 4.2 of the Focus Report.
ETF Design Concerns	I have concerns about the pipe route for future pipe breaks or blow outs and Northern Pulp's inability to detect leaks.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	Ice scouring was briefly discussed in the report, but there was no mention of mock diffusers being installed. I would think a test over several winters would be required to see the diffusers avoid being damaged by ice scouring.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
ETF Design Concerns	if the pipe is going to be buried, how will they know if it has broken or leaked. We know that there was a pipe break carrying effluent and it was only detected by a person out walking. What if it happens where no one would notice - how would they know and what would the ramifications be if it leaked for a long time?	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	In reading further into the proposal I have discovered many other areas of concern. Detailed design has not been completed for the construction of the marine outfall and pipeline. The preferred method for trenching the marine pipeline will likely be by side-cast excavation methods with re-use of bottom materials without bringing to surface. And comments such as The treated effluent is anticipated to meet compliance etc.	Individual Public Comment	Refer to section 2.5 for comments concerning proposed changes to the pipeline construction methodology and other associated pipeline work, related to the potential changes to the marine portion of the pipeline route.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	In section 10.0 there is a statement that HDPE is not susceptible to thermal expansion like steel pipe. THAT IS FALSE. For example, on a 10 degree Fahrenheit temperature change, the 4.1 km section underwater would change 11 feet in length. The seasonal seawater change is more than that. Therefore, expansion does need attention. Repairing a leak in a 3 foot diameter pipe on land is a significant exercise. Repairing a leak underwater, after a difficult job of finding the leak, is even more significant.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	In section 8 I have concerns about floatation of the underwater pipe if the slope is not uniform. I do raise serious concerns about how to detect leakage on the underwater portion of the pipe. Once the pipe is in service, nothing short of plugging the diffusers would allow any testing for leaks from the underwater based part. There is also no real ability to sample at the diffusers to get a real effluent test. Sampling in the Northumberland Strait would leave all kinds of room for argument about the effluent albeit from the plant. One item on the land based part of the pipe that really disturbs me is air release valves on the high points. These would be likely something like 4 inch openings and such valves do stick open occasionally. When that happens, then the drain point often goes unnoticed in a ditch or field for some time. If such a drain happens to be in the Pictou Water Supply area, then the situation could be serious.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	In those 1700 pages there are many issues to comment on. Among other issues, there is the lack of critical information on effluent composition and on the majority of the VECs, the absence of water analyses from Caribou Harbour, and the use of baseline water data from Pictou Harbour as "proxy" -- which Northern Pulp itself admits is more polluted than Caribou Harbour -- and the very strange use of an HHE report based on a human health risk analysis of a mill-that-never-existed. I would have thought those omissions would have led you as Minister to refuse registration of the project documents as incomplete. But that did not happen, so I would hope these serious omissions will stand as red flags to your department now.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
ETF Design Concerns	Internal emails that received through a FOIPOP request show that Dillon consultants raised the issue of heavy metals, such as mercury, and of dioxins and furans in the effluent. In January 2018, Dillon sent a list of questions to Northern Pulp, KSH Consulting, and TIR, saying it needed information on the "percentage of dioxins and furans in the final effluent going into the straight [sic] daily." It is anticipated that the effluent plume will not be visible when it reaches the water's surface? It is clearly stated that it is anticipated, not known. Should a plume of any type be visible, it will have direct and lasting effects on our tourism industry as the Caribou - Wood Islands ferry to PE Island will pass directly by the discharge point. This is an example of only one direct consequence and does not speak to the many others including the fishery, recreation usage, environmental effects and general reputation of the province. Again, assumptions simply is not strong enough when an issue as important as this is at stake.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
ETF Design Concerns	It is proposed that a "boring method" will be used to send the pipe around the current and recently redesigned rotary in Pictou. Again, really? In an area that is just beginning to give the Town of Pictou some promising retail development?	Individual Public Comment	Refer to section 4.2 and Addendum 3.0 for comments concerning the receiving water study. The Project will meet environmental regulations and requirements, and the NPNS will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment.
ETF Design Concerns	It is proposed that a "boring method" will be used to send the pipe around the current and recently redesigned rotary in Pictou. Again, really? In an area that is just beginning to give the Town of Pictou some promising retail development?	Individual Public Comment	Refer to section 2.1 for comments concerning effluent pipeline location, routing and intersecting properties.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	It is very troublesome that Northern Pulp's pipe route is going through the Town of Pictou's watershed. If there is ever a leak that effluent is going directly into the water source for a town.	Individual Public Comment	Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
ETF Design Concerns	Little discussion is made of wood fibres and the inorganic composition of the water waters. The process chemicals in a Kraft pulp digestion process are all water soluble. The waste wood fibres lost in the waste waters, float due to the specific gravity. The first stage clarifier does not describe any wood fibre retention, nor the capture of water soluble chemicals. The clarifier is designed to capture only dense total solids which may or may not settle out in the very turbulent clarifier environment.	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
ETF Design Concerns	More recently, a significant methyl mercury contamination is reported to exist adjacent to the proposed replacement ETF. There is not enough clarity about heavy metals and the potential health impacts.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
ETF Design Concerns	My concern is that the leaks from the new pipe will allow 50 million litres or more of waste into the straight. This happening only once could decimate the fisheries industry. What is being done to ensure that leaks are detected and dealt with immediately? Also how will you mitigate temperature differences between the effluent and the surrounding temperature of the water in the strait?	Individual Public Comment	Information on the proposed methods to monitor for any potential effects are provided in Section 5.2 of the Focus Report. Additionally, Section 4.2 provides information on the receiving Water Study.
ETF Design Concerns	My concern with this section is the unsafe effect that can happen to the water supply, fish and marine life and human safety if there is an accidental release of dangerous material. We are talking lives and the rich ecosystem that is being put at stake all for this company and their wealth, Northern Pulp had a recent leak in October 2018 although the Company did not think it was a huge deal because to them it was just a small one. It does not matter the size of the leak, it is the fact that it went unnoticed by the Company as it was reported by a couple out walking. There was another one at this plant 5 years ago. (CBC News (2014) "Northern Pulp mill shut down due to effluent leak" CBC, 10 June). Then in 2008, the underwater pipe broke and caused a lengthy shutdown of the mill. The Provincial taxpayers either loaned or gave the \$15 million to make sure this would not happen again and then for it to happen so soon again is a huge concern. I question the NP inspections and how many leaks are happening that the community is not aware of? And if a pipe is underground it will never be noticed!	Individual Public Comment	Refer to section 3.6 for comments concerning potential releases of waste dangerous goods at the project site and where they will be directed for treatment.
ETF Design Concerns	Northern Pulp didn't mention all the mercury that they have buried on their property! In fact, they didn't mention any of the mercury. Nova Scotia Department of Environment know about the Mercury, Northern Pulp knows about the mercury and Dillon Consultants know about the mercury; yet no mention of it in the environmental assessment!	Individual Public Comment	Monitoring will be conducted as part of construction. Contingency plans will be in place to address contaminant if identified.
ETF Design Concerns	Northern Pulp's inability to effectively maintain the integrity of their equipment over time would suggest that the ability of the company to prevent environment damage from effluent pipe breaks in the future is uncertain at best, not in keeping with the precautionary principle, and, therefore, too risky a prospect.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	Nowhere in Northern Pulp's EA does it mention a process for kraft interruption or their cleaning processes for the items mentioned above. The EA does not mention how the new system will handle these chemicals in their raw format or how the microorganisms that are used in the AST system will interact with these chemicals. This is a major concern because these types of incidents happen far too often in this plant and more information should be addresses to what will the effects be on the AST system. Any slight mix up in their process will affect there AST system which then affects the outfall discharge.	Individual Public Comment	Refer to section 2.3 for comments concerning the physical and chemical characterization of NPNS' PRESENT raw wastewater and the proposed technology for treatment.
ETF Design Concerns	On page 433 of the proposal, the physical land use in the vicinity of the land-based portion of the effluent pipeline route is set out. There are a number of land uses missing from this list, including single family homes and cottages, the Caribou fishing wharf, the fishing wharf at North Nova Seafoods, the North Nova Seafoods fish plant, and the Pictou Island ferry.	Individual Public Comment	Refer to section 2.1 for comments concerning effluent pipeline location, routing and intersecting properties.
ETF Design Concerns	Once effluents have passed the clarifier system, there is little opportunity for subsequent remediation should BOD testing indicate an issue. BOD testing, requiring an hour to complete, provides only three hours to stop production of the mill.	Individual Public Comment	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology).
ETF Design Concerns	One of the risks identified by the mill is that plastic from the MBBR moving bed biofilm reactor could end up in the receiving water. How is this addressed?	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
ETF Design Concerns	Other undertakings for this proposal: Why is it that Northern Pulp has listed 6 diffusers in their diagram but registered the plan with only 3 diffusers to discharge the effluent? Why is that Northern Pulp was allowed to release a proposal without holding ANY new public information sessions for the public in regards to this new location?	Individual Public Comment	Diffuser configuration was based on the meeting regulatory requirements as determined by the receiving water study (Section 4.2). The Terms of Reference for the Focus Report was established by NSE.
ETF Design Concerns	Pictou's domestic water is supplied by numerous deep wells through which the proposed effluent pipe will pass. What steps are being proposed to protect this water supply?	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	Plans for Northern Pulp's new ETF show that the clarifiers and the activated sludge basins with depths of seven metres and greater would sit very close to the former Canso Chemicals site. There is a possibility that mercury from the contaminated site could seep into the treatment system and end up in the sludge that will be burned, or in the effluent released into the Strait.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials. Futhermore, monitoring will be conducted as part of construction. Contingency plans will be in place to address contaminant if identified.
ETF Design Concerns	Power outage caused Harmac mill in BC to pump untreated effluent into the ocean. What would prevent that from happening here?	Individual Public Comment	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
ETF Design Concerns	Section 12.3.9.3 says that the plume from the diffuser will reach the surface but will not be visible. That statement is questionable.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
ETF Design Concerns	Should Northern Pulp carry out its plan to place an even more contentious and unwanted pipe along the #106 and out into Caribou Harbour, I fear that such a pipe would not only be subject to the poor maintenance record of its own corporation, but also to potential sabotage from angry citizens. How safe is a pipe, either overland or underwater, when so many cannot countenance its presence in their community and over their watershed?	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	The actual safety and maintenance of any pipeline, both over land and underwater.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	The EA does not detail the monitoring of the new system. A detail of inspections by people and electronic devices should be provided. Will monitoring be continuous 24/7, or longer periods of time? How will the portion of pipe imbedded in the Strait be monitored? Based on the last two pipe breaks, the current methods of detecting and preventative maintenance are inadequate.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	The elimination of the Boat Harbour Basin and the change in location for the receiving water means that more pollutants would reach the Northumberland Strait than compared to the current system.	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
ETF Design Concerns	The elimination of the Boat Harbour Basin is a huge factor because EEM data shows that the Basin has a large effect on effluent quality that is currently reaching the saltwater.	Individual Public Comment	Refer to section 7.4 for comments concerning the Environmental Effects Monitoring (EEM) Program.
ETF Design Concerns	The fact is that at times pipes leak and sometimes break. We have been made aware of two leaks in the current system at Northern Pulp in the past several years. The conditions where a pipeline is installed, the person(s) installing the pipeline and the actual pipe itself are all subject to the real risk of leakage and potential environmental damage.	Individual Public Comment	Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
ETF Design Concerns	The final characteristics of the effluent are admittedly unknown by Northern Pulp and will remain uncertain until the new treatment system is up and running as indicated in Section 9.0 Human Health Evaluation, page 502.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
ETF Design Concerns	The impacts of any potential catastrophic failure of the treatment system would be amplified by this very public and ecologically sensitive location. Any mechanical system is potentially subject to failure and the impacts of such a potential failure cannot be adequately assessed without knowledge of the chemical composition and physical characterization of the effluent.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	The lack of information regarding what will be discharged is most concerning. As Paper Excellence operates a number of bleached kraft mills throughout the world this information should be readily available and should have been included in this proposal. To state they won't know what will be going into the Northumberland Strait until the system is operational is highly questionable.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
ETF Design Concerns	The mitigation measures provided for an accidental release of treated effluent from the pipeline or the effluent treatment facility are construction specifications and a proposed maintenance and inspection program. If a leak is encountered the mill should be required to stop operations (cease effluent flow). Further, what is the risk to groundwater if a leak occurs in the land based pipeline? This is not discussed in the report and is of particular concern given that the pipeline crosses through the watershed for the Town of Pictou municipal well water supply.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	The new ETF would be worse than the old facility because of the elimination of the Boat Harbour Basin. Boat Harbour achieves a "polishing" of the effluent and a removal of a substantial amount of solids. What is pumped out into the Strait through this new proposed pipe is not, in fact, "state of the art": it is worse by far. Northern Pulp might be proposing a newer system, but the location is much riskier. Because of this, more toxins (though, as the report admits, still "unknown") will reach the Strait.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
ETF Design Concerns	The new system effluent treatment will produce far more solids than the old method which settled most of this material in Boat Harbor, 1000 kg solids minimum per day is the least load expected to be discharged.	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	The O2 delignification system is not laid out on how or when it will be constructed, maintain and operates like the AST system. It is listed in the appendix has a future upgrade.	Individual Public Comment	Refer to Addendum 1.0 for comments relating to O2 delignification.
ETF Design Concerns	The open clarifiers will pose a very significant occupational health risk to Northern Pulp Mill workers/employees. The daily exposure limit to hydrogen sulphide H2S is less than 1 part per million ppm. The three clarifiers will off-gas hydrogen sulphide from 5 to 50 ppm depending upon winds. Hydrogen sulphide toxicity is not well addressed given labour regulations. This one gas can be potentially deadly as 100 ppm H2S with be fatal within 30 seconds. The effluent treatment facility does not address hydrogen sulphide gas emissions.	Individual Public Comment	Refer to section 6.2 for comments concerning air dispersion modelling.
ETF Design Concerns	The original plan called for six ports being required for the dispersal. The present plan calls for three ports. This is one of those facts that anyone going by Northern Pulp's open houses and distributed material are not aware. Under ideal conditions, this is supposed to bring the effluent to background conditions within 100 metres to meet Federal Guidelines. Although this trench is deeper than the original outflow location it is a narrow trench with a shifting bottom.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
ETF Design Concerns	The pipe then moves along the shoulder of the Trans Canada Highway near water courses and wetlands on its way towards where it reaches the Northumberland Strait. The aforementioned lack of studies on biological and marine environments and Northern Pulp's previously mentioned history is cause for concern here as well. With their not having done the studies and no plans to have them completed until the summer, I don't see how the NS Department of Environment can even make a judgement on the potential risk for this area.	Individual Public Comment	Refer to section 5.1 for comments concerning wetland baseline surveys and effects to wetlands.
ETF Design Concerns	The plan is to locate the ETF next to where Canso Chemicals was/is. Knowing the history of the missing mercury, what sort of excavating/site cleaning will go on here? I have concerns over any chemical from or near the former site being unearthed. Who would oversee this work? I would expect it would be some third party agency like NS Lands who have experience with this sort of work. What would be the process for doing any of the clearing? Knowing the concerns facing the removal and disposing of anything on the mill property or on the property of Canso Chemical be treated with the same care that is being applied to Boat Harbour which received both a Class Two provincial assessment as well as a Federal Assessment? If not, why not?	Individual Public Comment	Monitoring will be conducted as part of construction. Contingency plans will be in place to address contaminant if identified.
ETF Design Concerns	The proposal goes through the Pictou town and Caribou water supply. 2 provincial parks and 2 nature preserves are within the effluent pipe footprint	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	The proposal states that "The pipe may also be installed within a paved portion of highway 106 to avoid existing infrastructure or environmentally sensitive features." So, tractor trailers, buses, cars, motorcycles will be travelling alongside a pipe carrying effluent and the barriers between them will be a guardrail. Really!	Individual Public Comment	Refer to section 2.1 for comments concerning effluent pipeline location, routing and intersecting properties.
ETF Design Concerns	The proposed effluent treatment system is undersized for the clarifiers and the current daily wastewater volumes. Once effluents have passed the clarifier system, there is little opportunity for subsequent remediation should BOD testing indicate an issue. BOD testing requires an hour to complete in an onsite laboratory test, which only provides three hours to stop production of the Mill should a compliance issue arise.	Individual Public Comment	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology).

Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	The proposed effluent treatment system is undersized for the clarifiers and the current daily water volumes.	Individual Public Comment	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology).
ETF Design Concerns	The proposed spill basin on the plant site is planned to only hold 35 million litres of untreated effluent which is only 10-12 hrs of plant operation before it goes into the downstream system. If a malfunction happens where does the excess go?	Individual Public Comment	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
ETF Design Concerns	The report indicates that no field assessments for wetlands in the pipeline footprint area were completed due to the pipeline redesign required in fall 2018. Functional assessment information is only provided for WL-1 and WL-2 within the effluent treatment facility (ETF) footprint. Some of the wetlands in the pipeline footprint area would likely be considered wetlands of special significance by NSE given their location within a source water protection area or their type being salt marsh. The assessment of potential impact to wetlands cannot be determined without proper field assessment and functional assessment work being completed. This work should be completed prior to NSE making a decision on the proposed project.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	The spill basin only holds 35 million litres of untreated effluent (10-12 hrs) before it goes into the AST system. If a malfunction happens where does it go?	Individual Public Comment	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
ETF Design Concerns	The spill basin only holds 35 million litres of untreated effluent 10-12 hrs before it goes into the AST system. If a malfunction happens where does it go.	Individual Public Comment	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
ETF Design Concerns	The treated effluent pipe is proposed to go through our watershed to Caribou Harbour. How will we know the precautions are being enforced based on the years of cracked pipes and effluent spills with the most and the most recent spill on Oct. 21, 2018? What will happen when that pipeline has a break? There will be a break at some point in this lifespan. This happens in every building, machinery and industry.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options. See section 6.2 for more information.
ETF Design Concerns	The Waste proposal will be pumping effluent into the ocean after only processing it for 8 hours as opposed to the current waste system that takes about 30 days to process and reach the Strait.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' Future raw wastewater, modeling results and laboratory trials.
ETF Design Concerns	The waste waters are out of visual sight of the Mill, its response teams and could have days of non-compliant waste disposal before regulatory processes would require immediate shutdown of the proposed waste treatment system. This would be at the expense of fishermen, marine life and a valuable coastal zone area for tourists, residents and endangered marine mammals.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	There is a significant difference between the original project scope and the redesigned project as presented in the EA; namely the introduction of a 15.5km pipeline and an entirely new location for discharging the treated effluent into the marine environment. Critical information is missing from the submitted EA including any biological assessments along the routing of the on land pipeline (which passes through the watershed for the Town of Pictou municipal groundwater supply) and no marine habitat surveys were completed in the area now proposed for treated effluent discharge.	Individual Public Comment	Refer to section 2.1 for comments concerning effluent pipeline location, routing and intersecting properties.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	There is clearly an admission that effluent contaminants create negative effects over time. It goes on to state that discharging effluent into Boat Harbour is also not acceptable as: This option would see the release of treated effluent continue from the same location as the BHETF presently discharges. This would mean that, even if the discharge characteristics remain the same or improve, there would be no appreciable changes to existing conditions today in the local communities and in the Strait. The aim must be to improve the current conditions, not have no appreciable change? Yet this proposals response is to continue to dump effluent into the Strait, just at a different location.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
ETF Design Concerns	There is heavy ice in the Northumberland Strait most winters, how could the pipe survive the heavy pressure that would be applied to it.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
ETF Design Concerns	There is little mention of the mercury contamination on the former Canso Chemicals site directly adjacent to the proposed location of the new treatment facility. Disrupting this contamination on a site surrounded by water requires extreme caution and a full examination, but there is little mention of this in the proposal. There is insufficient evidence to know exactly how broad any damage might be. The companys claim that damage will be minimal is not credible and should not be accepted.	Individual Public Comment	Monitoring will be conducted as part of construction. Contingency plans will be in place to address contaminant if identified.
ETF Design Concerns	There is no guarantee that a waste pipe going alongside the Pictou Causeway will not be punctured at some point due to a car or transport truck leaving the road. If punctured, Pictou Harbour will be affected and there is no containment possibility.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	There is no indication that pipeline leak prevention monitoring is different from Boat Harbour – visual.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	There is no specific route for the pipe, so there can be no review of the safety of the route. (As far as we know, the proposed route runs a pipe along the Causeway, through Pictou's watershed, beside the road to Caribou Harbour, around the end of Caribou Island...)	Individual Public Comment	Refer to section 2.1 for comments concerning effluent pipeline location, routing and intersecting properties.
ETF Design Concerns	We are concerned as well about the life of the pipe itself overland or in some places a few feet underground as it follows the #106 to the sea and how this may affect our land masses, transportation and most importantly our Pictou Watershed.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	Who is going to monitor the effects of a pipe and how will it be monitored?	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
ETF Design Concerns	why does the design of the Effluent Treatment Facility determine it as "pipeline ready" when the effluent is still at polluting levels when it leaves the ETF? Who has the Liability for the effluent which escapes or is expelled offsite, on land and/or in the marine environment? This is not addressed in the application and is not that related to mitigation? Reversing the effect may not be possible so is a significant environmental effect.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	<p>Another area of concern is with the transition in effluent systems from the current Aerated Stabilization Basin treatment (ASB) system to the proposed biological Activated Sludge Treatment (AST) system. While these newer systems have shown they can provide higher HOD reduction efficiency, they are more susceptible to settling issues and disruption to the biological community that is central to this effluent treatment process. So called biological upset can occur regularly if not carefully managed by experienced operators. Therefore, this new system will require more highly trained operators and more testing to maintain effluent below legally required levels. The EA filing does not address these challenges associated with the changeover in process. The filing documents do not identify what testing will occur to ensure that the new system will be working efficiently and within desired parameters prior to the switch over from the ASH system nor the mechanisms that will be put in place to ensure proficiency of their operators and the operational procedures for the new facility.</p>	Nova Scotia Salmon Association and Atlantic Salmon Federation	The changeover plan will be developed in consultation with ECCC and NSE. We do not anticipate any issues with the changeover. Operators will be properly trained prior to commencing operation of the new ETF.
ETF Design Concerns	<p>compared to Boat Harbour, the new treatment facility will reduce the capacity to hold untreated effluent in the event of an emergency from 30 days down to a proponent-estimated 8-12 hours. Although it is known to occur, there is no publicly available information on how often an untreated effluent is required to be held each year and the duration of those periods. Given the size, age, and complexity of the mill, a capacity of only 8-12 hours seems insufficient for operators to identify and rectify problems, or to idle the plant while the problem is being fixed. The filing is also vague on how the proponent is planning to provide real-time monitoring of the effluent and how the company will deal with other emergency issues associated with effluent treatment and containment. Given the current regulations surrounding monitoring of effluent (monthly acute lethality testing) coupled with this uncertainty in monitoring and holding capacity this would mean that untreated effluent could potentially be discharged for a significant period of time before it would be detected and stopped by the proponent or detected by legally mandated monitoring. This is a serious concern. Therefore the holding capacity issue and emergency action plans involving effluent treatment and mill idling need to be addressed within the filing documents in order to properly assess the potential impacts of this project and develop appropriate monitoring and reporting conditions for the facility's operation.</p>	Nova Scotia Salmon Association and Atlantic Salmon Federation	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
ETF Design Concerns	<p>The outfall diffuser location is also an area of concern. The proposed location of the outfall diffusers is just beyond the inlet to Caribou Harbour. This area is known to have issues with sedimentation, infilling, and ice scour. It is not clear from the EA filing if this has been considered and how infilling may affect the performance of the diffusers. It is conceivable that it could result in blockages that would disrupt the diffusion patterns that are needed to ensure proper mixing to get the effluent within the legally required tolerance levels at the prescribed distances from the outflow pipe. As there is no information on the spatial and temporal distribution of fish migration routes or congregation points it is difficult to predict how changes to diffusion patterns could affect salmonids and other species. Additionally, the concealed nature of the diffusers means that issues with the effluent or with the diffusion pattern may not be detected in a timely manner.</p>	Nova Scotia Salmon Association and Atlantic Salmon Federation	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
ETF Design Concerns	<p>The outfall diffuser location is also an area of concern. The proposed location of the outfall diffusers is just beyond the inlet to Caribou Harbour. This area is known to have issues with sedimentation, infilling, and ice scour. It is not clear from the EA filing if this has been considered and how infilling may affect the performance of the diffusers. It is conceivable that it could result in blockages that would disrupt the diffusion patterns that are needed to ensure proper mixing to get the effluent within the legally required tolerance levels at the prescribed distances from the outflow pipe. As there is no information on the spatial and temporal distribution of fish migration routes or congregation points it is difficult to predict how changes to diffusion patterns could affect salmonids and other species. Additionally, the concealed nature of the diffusers means that issues with the effluent or with the diffusion pattern may not be detected in a timely manner.</p>	Nova Scotia Salmon Association and Atlantic Salmon Federation	Refer to section 3.3 for comments concerning effluent discharge parameters.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
ETF Design Concerns	There is also a lack of information concerning procedures for detecting and mitigating known issues such as biological shock, bulking, or for other failures within the treatment facility or within the mill. Failures in any one of these areas could lead to untreated effluent being pumped into Northumberland Strait, relying only on voluntary transparency by the proponent and the federally mandated monthly testing to detect the issue.	Nova Scotia Salmon Association and Atlantic Salmon Federation	Refer to section 3.1 for comments concerning treatment technology specifications (e.g., optimal performance range of the technology).
ETF Design Concerns	It is not acceptable that the pipe go anywhere near the watershed for Pictou drinking water. The residents of Pictou will not allow this to happen. The town of Pictou cannot risk a leak damaging their drinking water supply. Northern Pulp will have to propose a new route to totally avoid this area.		Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
ETF Design Concerns	There is a significant difference between the original project scope and the redesigned project as presented in the EA; namely the introduction of a 15.5km pipeline and an entirely new location for discharging the treated effluent into the marine environment. Critical information is missing from the submitted EA including any biological assessments along the routing of the on land pipeline (which passes through the watershed for the Town of Pictou municipal groundwater supply) and no marine habitat surveys were completed in the area now proposed for treated effluent discharge.		Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.
Flora/Floral Priority Species	For over 50% (9/17) of the VECs examined in this section, NPNS failed to conduct its own primary research to determine baseline conditions. The following list identifies the VECs for which NPNS did not complete primary studies: a) Freshwater Fish and Fish Habitat; b) Wetlands; c) Flora/Floral Priority Species d) Terrestrial Wildlife/Priority Species; e) Migratory Birds and Priority Bird Species/Habitat f) Harbour Physical Environment, Water Quality and Sediment Quality; g) Marine Fish and Fish Habitat; h) Marine Mammals, Sea Turtles and Marine Birds; and i) Marine Archaeological Resources	EcoJustice and Friends of the Northumberland Strait	Additional baseline surveys were completed in 2019 and the results of those surveys are provided in the Focus Report.
Flora/Floral Priority Species	All shellfish are extremely sensitive to toxins -- and also to temperature and to acidity in water as their shells are formed of calcium. I have thus far seen no proof that there won't be damage to the shellfish and other aquatic flora and fauna of the Strait. In fact, I have read the opinions of several marine biologists that such effluent could be extremely harmful to shellfish.	Individual Public Comment	Additional information regarding the potential effects marine species is provided in the Focus Report.
Flora/Floral Priority Species	Figure 8.12-1 on page 363 is a still photo of the bottom of Caribou Harbour. The caption states that it is devoid of macro flora and macro fauna. What is odd is that, according to Graham Edgar, Professor of marine ecology and conservation science at the University of Tasmania macro fauna are "the small invertebrates that are just marginally too small to see with the human eye." So macro fauna would not be seen -- how can the author conclude it is devoid of macro fauna?	Individual Public Comment	Additional baseline surveys were completed in 2019 and the results of those surveys are provided in the Focus Report. Note that this comment likely refers to macro-invertebrates, which are not equivalent in definition to the macro fauna referred to in the quoted section.
Flora/Floral Priority Species	The report indicates that the assessments listed below are not yet completed: • Avian / turtle follow-up field studies, • MEKS field surveys, • Vegetation, wetland and watercourse follow-up field studies, • Marine seismic, geotechnical and habitat surveys The potential environmental impacts of the proposed project cannot be fully assessed with this work not yet completed, in particular the marine habitat surveys. NSE should require these assessments be completed prior to granting approval.	Individual Public Comment	These surveys were completed in 2019 and the results provided in the Focus Report

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Fresh Water Fish and Fish Habitat	CPAWS-NS is concerned about this proposed undertaking and the impact it could have on the environment and the inshore fishery.	Canadian Parks and Wilderness Society – Nova Scotia Chapter	Refer to section 7.1 for comments concerning the freshwater fish and fish habitat baseline surveys.
Fresh Water Fish and Fish Habitat	As discussed below, no testing or test results have been provided to show the effluent composition. Most of the substances contained in raw effluent are not discussed, and their impacts on the marine, freshwater, terrestrial and atmospheric environments are not analysed. Likewise, as will be discussed further below, the Stantec modelling used to predict the effluent mixing and transport in the marine environment has fundamental flaws, and must be disregarded.	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.2 for comments concerning the receiving water study.
Fresh Water Fish and Fish Habitat	FONS members were appalled by the prospect of up to 85,000,000 litres of hot treated effluent containing harmful chemicals, being pumped directly and continuously into the Strait every day. They are very concerned about the potential for serious and irreversible damage to Pictou County's air, soil, freshwater, wetlands and wildlife, and to the Strait ecosystem and the local economy it supports, including fisheries and tourism.	EcoJustice and Friends of the Northumberland Strait	The Project will meet environmental regulations and requirements, and the NPNS will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment.
Fresh Water Fish and Fish Habitat	For over 50% (9/17) of the VECs examined in this section, NPNS failed to conduct its own primary research to determine baseline conditions. The following list identifies the VECs for which NPNS did not complete primary studies: a) Freshwater Fish and Fish Habitat; b) Wetlands; c) Flora/Floral Priority Species d) Terrestrial Wildlife/Priority Species; e) Migratory Birds and Priority Bird Species/Habitat f) Harbour Physical Environment, Water Quality and Sediment Quality; g) Marine Fish and Fish Habitat; h) Marine Mammals, Sea Turtles and Marine Birds; and i) Marine Archaeological Resources	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.1 for comments concerning the freshwater fish and fish habitat baseline surveys.
Fresh Water Fish and Fish Habitat	Every year I patiently wait for spring time to enjoy one of the things I love most about our province; the Northumberland Strait. From The beautiful beaches, to the only rivers left in our province that are home to the last of the wild Atlantic Salmon.. To think that Northern Pulp and their proposal to pipe their effluent into the Strait is even being considered, disappoints me deeply.	Individual Public Comment	Refer to section 7.1 for comments concerning the freshwater fish and fish habitat baseline surveys.
Fresh Water Fish and Fish Habitat	I am also extremely concerned about the trout and salmon that would be exposed to these contaminants! I am extremely concerned that one of the last places in North America to fish for Atlantic Salmon would be put on Jeopardy by allowing this plan to go through!!	Individual Public Comment	Refer to section 7.1 for comments concerning the freshwater fish and fish habitat baseline surveys.
Fresh Water Fish and Fish Habitat	If Dillon Consulting, EcoMetrix Inc. and NPNS are confident in the effluent NOT having any significant impact on the ocean bed and species of marine life - of not being affected; are these people willing to put their words where their mouth is - ie. They (EcoMetrix Inc.) having performed lethality tests on Rainbow Trout by placing 10 trout in a bucket of pure treated effluent and determining the effluent to be deemed safe as it were, if half of the 10 trout did not die within 96 hours. So the question comes to mind... are they willing to drink, let's say a half dozen glasses of this effluent to prove they are correct...is anyone who has this opinion of the treated effluent willing to drink glasses of this effluent? We are expecting our fish on and off our shorelines to be okay with it. So did British Columbia years ago and then reporting how many Salmon were affected with cancer in the Fraser River later on.	Individual Public Comment	Refer to section 7.1 for comments concerning the freshwater fish and fish habitat baseline surveys.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Fresh Water Fish and Fish Habitat	It is also a very important area for among other like lobster, crab and herring, it also includes species of concern like Atlantic Salmon and Stripe Bass. Northern Pulp and their consultants/ contractors have not completed the survey work for the area yet somehow concluded that there will be no adverse affects. Page 82 lists a number of things that Northern Pulp should have completed before filing let alone obtaining approval. They include: various approvals, avian/turtle studies, MEKS field studies, Archaeological shovel testing for pipeline, geotechnical land surveys for land portion of pipeline, marine seismic testing, habitat and confirmation of marine pipeline alignment. Still no mention of testing effluent on creatures like lobster, crab, Atlantic Salmon, striped bass...	Individual Public Comment	Refer to section 7.1 for comments concerning the freshwater fish and fish habitat baseline surveys.
Fresh Water Fish and Fish Habitat	The chart shows zero sightings for all species including white sucker, mummichog, minnows, perch, rainbow trout, gasper au, Atlantic salmon, brook trout, and brown bullhead. sees minnows, mummichogs, rainbow trout when he is smelt fishing. They are known to inhabit brackish waters and fishes smelts adjacent to where this sight test was conducted. Gaspereau frequently come up in his traps and are a feeding fish for lobster. It is very well known that Atlantic Salmon are certainly plentiful in the area.	Individual Public Comment	Refer to section 7.1 for comments concerning the freshwater fish and fish habitat baseline surveys.
Fresh Water Fish and Fish Habitat	Missing Studies Modelling of effluent transport and dispersion from pipeline breaks, ruptures and leaks in marine, shoreline and terrestrial environments;	EcoJustice and Friends of the Northumberland Strait	Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
Groundwater	The effluent pipeline will go over Pictou Harbour, attached to the causeway across Highway 106 and then in a trench through the Town of Pictou's water supply area, putting both at risk in the event of a pipeline breach or spill. Similarly, the potential for pipeline failure at Caribou Harbour is considerable. These are unacceptable risks.	Ecology Action Centre	Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
Groundwater	NPNS needs to provide more detail on spill response and safeguards against potential accidents or malfunctions along the terrestrial portion of the pipeline.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills. Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
Groundwater	As a citizen of the Town of Pictou I have long awaited improvement to the water quality in our community. A new water treatment facility was put into operation in 2018. The proposed route for effluent pipe is through and in proximity of the Towns protected watershed area. The Mill has had numerous breaks in the pipeline line which currently dumps the effluent into Boat Harbour. There is no confidence that Northern Pulp can prevent future spills nor put into place sufficient monitoring to detect spills and take action quick enough to prevent poisoning of the Town's water supply. Typically, past behaviour is an accurate indicator of future behaviour, that has certainly been the case with Northern Pulp and I suggest that this risk is not acceptable given their past record of spills. I should also note that the Town watershed feeds private well systems of residents living in the Municipality of Pictou County. A pipe carrying toxic waste through a watershed area is not acceptable.	Individual Public Comment	Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Groundwater	As both a private well/landowner and someone who works in the water/wastewater industry, I have concern with how quickly the consultants dismiss risks as non-significant or NS. If there is a chance that the pipeline could break and devastate water sources and the environment, thereby creating a non-reversible condition, with only partial promise that the effluent will not harm the environment it is not ANTICIPATED that the effluent plume will not be visible when it reaches the water surface, this is more than non-significant for those who could be impacted. The report states that effluent will meet PPER requirements, but this does not give me confidence when I drink water based on the Guidelines for Canadian Drinking Water Quality GCDWQ.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
Groundwater	In Section 8.5 outlining Groundwater issues and their relation to the Town of Pictou water supply, there is an absence of clear, documented mitigation efforts that are evidence based to prevent contamination. There is an absence of reference to a specific mitigation/ground water monitoring systems that would alert necessary parties to a spill or leak, and possible contamination of water supply.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
Groundwater	On page 50, (section 5.3.1.1) NP claims that all construction will take place on their right of way boundaries. However, the proposed pipe would run alongside the Watershed for the town of Pictou. If only the effluent running through the pipe understands those boundaries too. Given the record of NP's pipe failures and spillage, and given the fact that monitoring is minimally carried out at best, disaster would be imminent for the drinking water for the town of Pictou. There is nothing more necessary for human life than clean water. Nothing. Pipes break. And pipes buried under the ground don't reveal the spillage until the damage has already occurred.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
Groundwater	The intended path of the pipeline goes over the water table that feeds Pictou town, if this pipe is ruptured by fair means or foul, the effects to the community would be significant. It could be that land shift or tree roots may rupture the pipe or perhaps more sinister, the strength of feeling against this project may attract more militant action. I believe that it would be implausible to maintain security of this facility. The report indicates that interactions between the project and groundwater are not anticipated. The rationale for not including groundwater as a valued ecosystem component (VEC) is that "...it is unlikely that groundwater from the PFA (project footprint area) would affect residential water supplies." Is groundwater for municipal use considered in this section? It appears only private residential wells were considered. The potential for impacts on the town of Pictou's municipal well water should be considered.	Individual Public Comment	Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
Groundwater	There is a significant difference between the original project scope and the redesigned project as presented in the EA; namely the introduction of a 15.5km pipeline and an entirely new location for discharging the treated effluent into the marine environment. Critical information is missing from the submitted EA including any biological assessments along the routing of the on land pipeline (which passes through the watershed for the Town of Pictou's municipal groundwater supply) and no marine habitat surveys were completed in the area now proposed for treated effluent discharge.	Individual Public Comment	Refer to section 2.1 for comments concerning effluent pipeline location, routing and intersecting properties.
Groundwater		Individual Public Comment	Refer to section 2.1 for comments concerning effluent pipeline location, routing and intersecting properties.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Groundwater	They say Non Significant effect on Groundwater. Can they be sure of this with at least two serious pipe leaks? More importantly since they have plans to run the pipe over the Town of Pictou's Watershed. To also add without Community or Council meetings to inform us of this, but letting the Town and the Citizens find out through a media release of a meeting that took place between PLFN and Fishers.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.
Groundwater	Who will be monitoring the waters surrounding this pipe?	Individual Public Comment	Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
Harbour Physical Environment, Water Quality and Sediment Quality	Instead of conducting its own primary research, NPNS purports to rely on previous research and existing scientific literature to support its assessment and its conclusion that there will be "no significant adverse residual environmental effects" on any of its identified VECs. However, this is highly problematic because the primary research cited by NPNS (or cited in the literature upon which NPNS relies) in many cases dates back decades.	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Harbour Physical Environment, Water Quality and Sediment Quality	As discussed below, no testing or test results have been provided to show the effluent's composition. Most of the substances contained in raw effluent are not discussed, and their impacts on the marine, freshwater, terrestrial and atmospheric environments are not analysed. Likewise, as will be discussed further below, the Stantec modelling used to predict the effluent mixing and transport in the marine environment has fundamental flaws, and must be disregarded.	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	As per the MacCarthy and Eglsson submission, "[i]ce is typically present in the Caribou area from the end of December through April, but can set in earlier and remain later if temperatures are cooler than normal." <sup>115</sup> At a minimum, then, ice will be present in and around the NPNS pipe route for over 1/3 of the year. This ice includes "fast ice," which freezes to the bottom of the Harbour in shallower inshore areas. <sup>116</sup>	EcoJustice and Friends of the Northumberland Strait	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	Boat Harbour has taken the brunt of the effluent discharge to date and there will be no comparable "buffer zone" effect on the effluent when discharged at CH-B.	EcoJustice and Friends of the Northumberland Strait	Section 4.2 addresses marine water quality effects.
Harbour Physical Environment, Water Quality and Sediment Quality	Dr. Fringer concludes that significant implementation issues in using the CORMIX near-field model have created unreliable results in the Receiving Water Studies. The ambient tidal current used to drive the CORMIX model is modelled by Stantec as much stronger than it would actually be during a neap tidal period. Tidal currents are even weaker during winter when ice cover decreases the strength of the tides. The CORMIX model also overestimates salinity as it does not take into account potential river inflow, which in turn leads to an overestimation of buoyancy and dilution. <sup>106</sup>	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	Dr. Fringer further notes that the Receiving Water Studies do not take into account settling of suspended solids during slack tides within 100m of the outfall, despite the potential for settling of such solids.	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	For over 50% (9/17) of the VECs examined in this section, NPNS failed to conduct its own primary research to determine baseline conditions. The following list identifies the VECs for which NPNS did not complete primary studies: a) Freshwater Fish and Fish Habitat; b) Wetlands; c) Flora/Floral Priority Species d) Terrestrial Wildlife/Priority Species; e) Migratory Birds and Priority Bird Species/Habitat f) Harbour Physical Environment, Water Quality and Sediment Quality; g) Marine Fish and Fish Habitat; h) Marine Mammals, Sea Turtles and Marine Birds; and i) Marine Archaeological Resources	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	In a letter to NPNS dated June 14, 2017, NSE advised NPNS that "a receiving water study should address all potential substances of concern, not limited to those outlined in the Pulp and Paper Effluent Regulations." 65 No such list of all potential substances of concern appear in the receiving water study despite the express requirement that a list be provided and addressed.	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	In this regard, Dr. Fringer states that Stantec's use of the two-dimensional MIKE 21 model is inappropriate as it fails to take into account local dynamics caused by wind, river inflows, offshore currents, ice, waves and storm surge. Due to the highly three-dimensional circulation in the region, a three-dimensional model (MIKE 3) should have been used to model the behaviour of the effluent in the receiving water environment in relation to the outfall at CH-B, and the surrounding area.104	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	Missing Studies - Baseline studies on Caribou Harbour and Caribou Channel. NPNS instead uses Pictou Harbour as a proxy (although no baseline study was conducted for Pictou Harbour either);	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	Missing Studies Baseline data for the larger Strait area, regarding water quality and other municipal, industrial and agricultural discharges into the waters of the Strait;	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	No attempt is made to explain the lack of data from NPNS or KSH regarding the precise effect of the ETF on the mill's effluent,	EcoJustice and Friends of the Northumberland Strait	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	NP did not provide detailed information with respect to the chemical composition of its effluent	EcoJustice and Friends of the Northumberland Strait	Refer to section 2.3 for comments concerning the physical and chemical characterization of NPNS' PRESENT raw wastewater and the proposed technology for treatment.
Harbour Physical Environment, Water Quality and Sediment Quality	NPNS has chosen not to provide any hard evidence that the effluent will achieve the parameters set out in its submission to the Minister, relying instead on hypothetical assumed parameters.	EcoJustice and Friends of the Northumberland Strait	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	NPNS states that specific effluent chemistry characteristics "will not be known with certainty until the project is operational." 130 As Dr. Sweeney notes, without detailed information identifying precisely what will be coming out of NPNS's proposed outfall	EcoJustice and Friends of the Northumberland Strait	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	NPNS's materials contain no environmental baseline information specific to the receiving environment	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	Possibly the most significant gap in the materials filed by NPNS and its consultants, is the complete lack of objective scientific reporting and test results regarding the composition of the effluent that is to be discharged from the proposed ETF into the herring spawning grounds and Caribou Channel.	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The absence of scientific studies leads to the conclusion that NPNS is unable to prove the most fundamental component of their EA proposal, which is: "what is the composition of the effluent that NPNS proposes to discharge?"	EcoJustice and Friends of the Northumberland Strait	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	The channel shifts from time to time mostly due to storms. Ice and tide also move sand around as it is very shallow in this area. Storms can pile ice up to 30 feet high which can dig deep into the soft bottom. This could damage the buried pipe. ...If the pipe is covered in armour stone, the sand on either side will be undermined by wind and wave action exposing the pipe to the full force of the ice in winter. If no armour stone is used, those same fall storms could easily expose the pipe, as anyone living near a beach knows how easily sand is shifted by storm winds and waves. Either way the pipe is unlikely to survive extreme conditions in this area.	EcoJustice and Friends of the Northumberland Strait	Refer to section 2.5 for comments concerning proposed changes to the pipeline construction methodology and other associated pipeline work, related to the potential changes to the marine portion of the pipeline route.
Harbour Physical Environment, Water Quality and Sediment Quality	the critique requires the conclusion that the Receiving Water Studies cannot reliably determine the likelihood that adverse impacts or significant environmental effects will occur that cannot be mitigated in the receiving environment. As these studies form the backbone of the NPNS submission, NPNS has failed to discharge its onus to demonstrate that its proposal to discharge effluent into the Strait will not cause harm.	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The cumulative impacts of current discharges of from agricultural activities, and from industrial and municipal wastewaters, emanating from Nova Scotia, New Brunswick and Prince Edward Island, are not examined	EcoJustice and Friends of the Northumberland Strait	Not within the scope of the focus report.
Harbour Physical Environment, Water Quality and Sediment Quality	The discussion of cumulative effects in section 12 of the NPNS EA materials sets an artificially small area within which cumulative effects are examined. Even within that boundary, effects of agricultural activity are not discussed, and the impacts of existing municipal wastewater discharges are not taken into account. Further, due to the boundary in the EA submission, there is no discussion of the macro conditions in the Strait	EcoJustice and Friends of the Northumberland Strait	This is Project impact is addressed in section 7.3 & 9.2 of the focus report. Effects on the agricultural activities are not specifically mentioned but there is no evidence that any significant impact will occur.
Harbour Physical Environment, Water Quality and Sediment Quality	The EA does not provide objective scientific evidence as to the likelihood that the proposed ETF will, or can, actually change the effluent into a harmless and benign substance, or that it will meet any standard or will in fact be "better quality" than what is currently discharged into in Boat Harbour.	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The EA submission, although lengthy, lacks critical information, or sufficient detail, in crucial areas such as: (a) The composition of the effluent to be discharged into the Northumberland Strait; (b) Studies showing actual composition of raw effluent produced at the NPNS facility	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.2 for comments concerning the receiving water study.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	The EA submission, although lengthy, lacks critical information, or sufficient detail, in crucial areas such as: (f) Baseline data specific to either Caribou Harbour or Caribou Channel; (g) Professional ecosystem studies in relation to the marine and terrestrial environments; (h) Thorough and accurate modelling to determine mixing capabilities in Caribou Channel and how the effluent will fare as it circulates in the Strait;	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	the ice, storms and other unpredictable marine conditions will hinder NPNS's ability to monitor its pipe and diffuser for damage and leaks, and to investigate and repair spills in the marine environment. NPNS does not explain how it will conduct its monitoring and spill response activities in the presence of ice – in fact, its EA materials do not even acknowledge that ice may be an issue when it comes to monitoring and responding to spills. Likewise, the EA materials do not contain an examination of the particular effects of a prolonged and inaccessible effluent spill, at any point along the pipeline, or within the marine area under ice cover. Despite the lengthy ice-bound periods during the winter, and the significant possibility of damage by ice or other forces during the winter, NPNS provides no explanation of what could be done to protect the marine environment of Caribou Harbour or the Caribou Channel, before an opportunity arises to access and repair the damaged infrastructure.	EcoJustice and Friends of the Northumberland Strait	Refer to section 2.2 of the Focus Report for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour. The predicted modelling was performed using an open pipe scenario. As such, the treated effluent that will be flowing from the pipe will still be able to meet all regulations if any damage was to unexpectedly occur to the pipeline.
Harbour Physical Environment, Water Quality and Sediment Quality	The impacts of mercury and cadmium are not assessed in any meaningful way in the EA submission, yet they are clearly present in the effluent from the Mill and in the sediments in Boat Harbour Basin. The long-term effects of discharging such substances into the marine environment are not addressed in the NPNS submission, despite the potential impacts on the marine ecosystem and marine species and human health, as well on air quality via burning sludge. The impacts of these substances, being bio-accumulative, must be analyzed.	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.2 for comments concerning the receiving water study, and Sections 7.3 for comments regarding impacts to Marine Environment.
Harbour Physical Environment, Water Quality and Sediment Quality	The NPNS materials contain no assessment or studies done to demonstrate that the new treatment facility can achieve the assumed water quality characteristics.	EcoJustice and Friends of the Northumberland Strait	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	The only information about the characteristics and composition of the effluent that will flow out of the proposed ETF is described as "expected water quality characteristics". It appears in tables set out in the Receiving Water Studies. <sup>47</sup> As well, no explanation is provided as to why the data in these tables differs from one table to another: the expected water quality value for Total Nitrogen (TN) is listed as 3.0 mg/L in the August 2017 Preliminary Study, but 6.0 mg/L in the December 2018 Addendum.	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	the Receiving Water Studies fail to take into account crucial local conditions when they assess how the effluent would behave after discharge at CH-B. Mr. MacCarthy and Mr. Eglsson describe local currents, such as the Pictou Island counter clockwise gyre current. These submissions demonstrate that the Studies, and the NPNS submission generally, vastly underestimate the effects of ice, wind, tide and other dynamics, and demonstrate the vulnerability of a plastic pipe placed on, or buried in, the floor of Caribou Harbour and the Caribou Channel.	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.2 for comments concerning the receiving water study.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	The Stantec Receiving Water Studies, on which much of the NPNS EA is founded, are unreliable and the modelling exercise undertaken was not appropriate for the receiving environment. FONS submits that the Receiving Water Studies, and other materials based on the conclusions of those studies, must be disregarded and new, properly conducted studies must be included in an EA report.	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	"The discharge of effluent containing elevated levels of TSS could also cause a change in sediment quality near the diffuser due to the settlement of suspended sediment, which could cause a change in sediment characteristics such as sand and silt size fractions and/or a change in chemical composition of sediments". The TSS could very likely spread beyond the area near the diffuser due to the buoyant nature of effluent and the likelihood that the effluent plume will reach the surface of the marine water column. This is the very same TSS, known to be harmful to marine life	Ecology Action Centre	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	In an attempt to explain this lack of transparency, the NPNS registration document states, "At this time, effluent chemistry characteristics (including the specific substances present in treated effluent and their anticipated concentrations) will not be known with certainty until the project is operational" (pg. 489). An expectation that NS Environment would grant approval to this project without provision of full details of the content of this effluent to be discharged into the Northumberland Strait should be extremely suspect	Ecology Action Centre	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	NPNS's registration document is very poor and fails to provide necessary information about key elements of their plan, including and importantly - the content of the substances they wish to pump in large volumes into the Northumberland Strait and the potential impacts that it undoubtedly will have on marine life and air quality.	Ecology Action Centre	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The Northumberland Strait is a relatively shallow area with slow moving currents far from the open sea. This makes it a very low "flushing" system. It takes approximately a year for the water to fully exchange. Northern Pulp's own reports say that on top of 60 to 80 million liters of liquid effluent they also anticipate releasing up to four tons of suspended solids in their wastewater each day. In addition to that it is important to note that every drain, toilet and sink inside the mill is attached to the effluent disposal system meaning that in addition to human waste every oil or chemical spill inside the plant ends up in their effluent system. Test results in the current receiving waters (Boat Harbour) show the presence of dioxins, furans, chlorinated compounds, halogenated organic compounds and traces of heavy metals. These substances are known to have serious negative impacts to aquatic and other life. In addition to the chemicals and solids produced in the pulping process the new effluent treatment system "will require several chemical inputs, including urea, phosphorus, sodium hydroxide, sulfuric acid and an anti-foam agent to support its process." (pg. 46). So these too would be sent out into the Northumberland Strait. With so many deleterious inputs it's no wonder NPNS doesn't know what will be in their own effluent stream.	Ecology Action Centre	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	The NPNS registration document clearly shows that there will be very little, if any, positive change in wastewater quality with the proposed effluent treatment system and information revealed through the FOIPOP requested showed NPNS suggesting that the effluent could in fact be worse. With a myriad of chemical and nutrient inputs from municipal wastewater systems, industrial operations and agricultural runoff, among others, this is no time to augment present threats to marine life by adding a continuous, high volume stream of toxic pollution into a shallow, low flowing section of the ecosystem.	Ecology Action Centre	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	The proponent's claim that the majority of the disruption to ocean habitat is likely to take place during the project's construction phase, when the seafloor is to be dredged and laid with a rocky substrate to lay the pipeline and keep it place over the long-term. As for the operations phase, during which the pipe will dump its tens of million litres of treated effluent into the Strait, the report suggest that all concerns related to the quality of the water will dissipate within five metres of the discharge location. The report claims that "given the likely lack of spatial overlap at this location, significant cumulative residual environmental effects to water quality or sediment quality as a result of treated effluent discharge are not likely." But several studies, as well as ECCC expert testimony before the Prince Edward Island Standing Committee on Agriculture and Fisheries referenced above, tell us that pulp and paper effluent is known to be harmful to fish and fish habitat in the majority of tested circumstances. In essence, the substance that Northern Pulp would inject into the Northumberland Strait would, undoubtedly, pose a threat to aquatic life - and the assessment document says as much - but suggests that, because of dilutive power of the ocean, no great harm should occur in this instance.	Ecology Action Centre	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	Total Suspended Solids (TSS) largely consists of cellulose fibers. Although the document states that 85 to 95% of the lignin, cellulose, sodium sulphide and sodium hydroxide will be removed from the sludge via biological activity in treatment, there is no information provided about the 5-15% which survives treatment - the cellulose. Cellulose fibers are refractory, meaning that they don't degrade quickly or decompose well in water, especially seawater. The registration document provides, in section 5.2.2.9 on Effluent Quality, that the effluent annual average flow will have an anticipated TSS concentration of 48 mg/l of effluent which equates to a total 3053 kg of TSS per day, i.e., a full dump truck load each day in equivalent tonnage. These fibers have the potential to settle into a deep hole or depression, smothering the bottom and causing anoxia in the underlying sediment.	Ecology Action Centre	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	A project of this magnitude warrants sufficient field work to be completed. The fact that there was NO field work adds to the gap in knowledge on this topic. Further studies should be carried out to confirm harbour physical environment, current water quality and sediment quality as a baseline for the future.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	A rationale for not completing an industry-standard characterization of the effluent plume at CH-A or CH-B must be presented.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 4.2 for comments concerning the receiving water study.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	Discussion is required around the interactions between potential impacts from the new ETF discharges from the outfall, and ferry discharges within the harbour and Strait, and in turn the implications for ecological and human health risks, from a cumulative effects assessment standpoint.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Harbour Physical Environment, Water Quality and Sediment Quality	Northern Pulp must collect current and relevant data on sediment characterization at the proposed outfall location.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	NPNS fails to provide information about what potentially harmful components will be contained in the effluent.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	NPNS fails to provide sufficient evidence that ice scour will not compromise the integrity and function of the pipeline and the diffusers.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	NPNS must provide a study on sea floor ice scouring at, and near, the proposed outfalls CH-A and CH-B and make recommendations on the best location for an effluent outfall diffuser.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	NPNS must provide a water quality study for the CH-A and CH-B locations and other related areas, including Caribou Harbour and the surroundings of Pictou Island, based on numerous sampling stations. As part of this study, one or two reference areas should be considered with several sampling stations.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	NPNS must provide field verification of the water column stratification, and these measurements, taken at the CH-A and CH-B locations, and other areas, should be part of a water quality survey.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	NPNS must provide modelling results for the proposed CH-A effluent discharge location.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Relevant results have been provided.
Harbour Physical Environment, Water Quality and Sediment Quality	NPNS should conduct a comprehensive baseline assessment to characterize current conditions of the marine environment within the project assessment area, including sediment and water quality.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	Provide a brief description in Section 8.11.5 of what the Follow-up and Monitoring Program entails.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.4 for comments concerning the Environmental Effects Monitoring (EEM) Program.
Harbour Physical Environment, Water Quality and Sediment Quality	Provide a water quality study for the CH-A and CH-B locations and other related areas, including Caribou Harbour and the surroundings of Pictou Island, using numerous sampling stations. As part of this study, one or two reference areas should be considered with several sampling stations.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	Provide an explanation as to how to reconcile the input of MIKE 21 July data for use in CORMIX simulations for August–September, and possible implications of this on the study results.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	Relying on data that is 30 years old is unacceptable considering the simplicity of completing these tests. This project focuses on releasing effluent into a highly productive section of the marine environment and the care should have been taken to collect all appropriate data.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	Summary information should be provided in the main EA text on both the Preliminary Receiving Water Study and the Addendum Receiving Water Study. How Mike 21 and Cormix models were used should be clearly stated.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The EA must assess cumulative effects of the proposed project on the marine environment, in light of current stressors that have already been identified, including increases in surface water temperature and salinity, as well as decreases in oxygen saturation.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The Gulf of St. Lawrence has been identified as an area of rapid coastal deoxygenation by Claret, M. et. al (2018). Their analysis shows increased surface water temperature, increased salinity and decreased oxygen saturation. Changes to any of these variables in isolation can cause stress on important commercial species, changes to all three has the potential for synergistic effects and should not be overlooked. The addition of hot, fresh water to the Northumberland Strait for an extended period should not be so easily passed by in this environmental assessment.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The proponent should collect and analyze current water quality data, from the proposed outfall location, in order for the EA to adequately assess impacts to the water quality from the project, and to adequately plan for preventing or mitigating those potential impacts. Or major concern is that Northern Pulp's associated effluent will be harmful to the receiving waters of the Northumberland Strait and its marine life habitat. Northern Pulp's current proposal (section 8.11.2.4) confirms that there has been no testing completed with respect to the water composition of Caribou Harbour. Instead Pictou Harbour was used as a proxy for Caribou Harbour with respect to water quality. The Authority views such an assumption on water composition as entirely inadequate. Pictou Harbour has been exposed to sewage from the Town of Pictou and other municipalities for over 200 years. In addition industrial waste from a shipyard, pulp mill, power plant, tire plant and many other businesses has been discharged into Pictou Harbour for over a century. Pictou Harbour also has three major feeding tributaries and Caribou Harbour only has one much smaller tributary. Caribou Harbour's water chemistry is potentially drastically different in comparison to Pictou Harbour.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality		Harbour Authority of Caribou	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The general consensus among the local fishermen and supported by the Authority is that proposed construction (highlighted on page 14, in appendix F of the proposal) will be insufficient to prevent ice damage.	Harbour Authority of Caribou	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	The Northern Pulp proposal relies on a receiving water study prepared by Stantec. This study indicates that there will be minimal flow of effluent discharge into Caribou Harbour. The Authority's position is that the methodology used to make this erroneous determination is subpar and inadequate. A significant volume of water from the discharge location flows into Caribou Harbour on a rising tide.	Harbour Authority of Caribou	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	Also if there is a failure in any section of the underwater pipe or it's Diffusers during the Winter when Ice is in the Strait, how is that to be rectified? Does the Northern Pulp Shutdown until the Ice is gone and the pipe can be repaired.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	"Engineering considerations for Caribou Harbour" These are not clearly laid out to show the distinction from Pictou Harbour which is more detailed. This is a significant gap for reviewers and can't support CHB as a viable option, just as for the rejected Pictou Harbour option.	Individual Public Comment	Refer to section 2.5 for comments concerning proposed changes to the pipeline construction methodology and other associated pipeline work, related to the potential changes to the marine portion of the pipeline route.
Harbour Physical Environment, Water Quality and Sediment Quality	"Modelling provides relatively higher dilution and less potential effluent impact on Caribou Harbour water. ...transported predominantly with the offshore currents in northwest and southeast directions. The effluent intrusion into Caribou Harbour is predicted to be minimum" The words in this statement are indefinite and more of a wait and see. Given what is at stake environmentally, this too low a standard to go forward with this application.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	"Point C results and the discharge from the proposed facility will be similar." The proposed ETF will not be improving the effluent state. "Fresh water from Middle River makes its way to the Northumberland Strait whether NPNS uses the water or not, therefore the same volume and fresh water mixing occurs naturally." This is a false statement. What is "natural" (from my understanding of the term) is the Middle River entering Loch Broom, then Pictou Harbour, then the Strait - freshwater and saltwater mixing occurring along the way by tides and currents and temperature and salinity ambient. The Northern Pulp manmade intervention is not natural. In the application, the Middle River is diverted at Loch Broom, to use in mill processes including the proposed ETF, then pumped from the mill site for 15.5 km via pipeline with the last 4.1 km on the seabed before being discharged at velocity from 3 diffusers set 25 meters apart and 100 more metres before predicted to be at ambient temperature and salinity	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	"Under the nearshore effluent dispersion scenario, the potential effects zone based on the sublethal toxicity testing is within 323 metres of the discharge at Boat Harbour. Under the offshore effluent dilution scenario, the potential effects zone extends to greater lengths (to ~ 7.3 km)". The accumulation would still occur but in an extended zone. The modelling uses the 85% figure for predominant southeast and north west flow. There is no comment on the modelling of the other 15% which I believe would include winds and currents that come up the harbour from any easterly direction. There would also be currents intersecting from the west across the north shore of Caribou Island. There is no mention of this as part of the modelling.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	"At this time, effluent chemistry characteristics (including the specific substances present in treated effluent and their anticipated concentrations) will not be known with certainty until the project is operational". In other words, we are to take this EA proposal at its word despite the fact that we don't know what they will be burning in the stacks, or indeed, what exactly they will be spewing out into the Strait.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	10. Based on BOD, currents, modelled effluent plume and bathymetry, what are the probabilities of formation of low oxygen zones dead-zones downstream of the diffuser? While the Environmental Assessment covers a lot of ground and is very voluminous, it seems to me that the potential for effects beyond a very localized area have been largely omitted in the analysis. Overall the zone of influence of the diffuser used in the environmental assessment seems very restricted, at least when looking at ecological rather than physiological effects. To me that seems like a glaring omission in what actually constitutes a large-scale natural experiment.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	3. What is downstream, i.e what is the position of the expected plume of diluted effluent?	Individual Public Comment	Refer to Addendum 3.0 for an explanation about initial mixing and dispersal of the plume.
Harbour Physical Environment, Water Quality and Sediment Quality	4. What is upstream, i.e. where will the water that dilutes the effluent come from?	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	6. What type of material is it that makes up this COD? Is it dissolved, particulate or colloidal? Is it totally non-biodegradable, or just very slow to decompose?	Individual Public Comment	Refer to Addendum 2.0 for comments relating to data to support assertions that chemical oxygen demand (COD) can be reduced to the proposed limit.
Harbour Physical Environment, Water Quality and Sediment Quality	7. If COD matter is particulate, what is its density, and is it prone to flocculation? I.e., can we expect it to either settle to the bottom or accumulate at the surface.	Individual Public Comment	Refer to Addendum 2.0 for comments relating to data to support assertions that chemical oxygen demand (COD) can be reduced to the proposed limit.
Harbour Physical Environment, Water Quality and Sediment Quality	8. If particulate or colloidal, is it of a size fraction that can be expected to enter the food-chain, i.e. will it potentially be taken up by filter-feeding animals such as bivalves and plankton? If taken up, is bioaccumulation likely?	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	A further danger for damage to the pipe would be the ice in the winter. From information gather from the Canadian Seabed Research. Ice Scouring is common in the Strait and it comes with great force at times creating deep cuts or grooves in the sea bed.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	According to the EA, the effluent will contain 4,000 kg total suspended solids each day. This would add to the build up that would end up in this narrow channel that is only about 60 feet deep.	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	Add to all this is the fact that Northern Pulp does not know just exactly what the effluent is comprised of. Yet they want to pump millions upon millions of this toxic sludge into our waters with no concerns for our health, the environment, tourism, wildlife, fish habitat and absolutely no appreciation for nature, just to name a few.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	Additional, the EA relies heavily on the 1992 Pulp and Paper Effluent Regulations (PPER) which are part of the Fisheries Act. The report states that "The effluent is anticipated to meet compliance with federal PPER." It should be noted that the EA provides no evidence to support this statement. No calculations of maximum total suspended solids (TSS) or biochemical oxygen demand (BOD) (which is how the PPER regulates effluent) are provided.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	After reading Appendix R of the EA I fail to see how this can even be called a study, if Stantec can run the study saying everything will meet background by 2 to 5 meters and Stantec is also in charge of running the lobster study which says because it meets background by 5 meters lobsters will not be affected. There needs to be independent third party studies done on both the plume and the effect on lobsters. Harvesters have history with Stantec (Confederation Bridge) and they have a history of not agreeing with their reports. The receiving water study is just a prediction, it is not factual therefore the results of Appendix R are not fact they are just a prediction based on a prediction, not very comforting to a \$2 billion a year industry.	Individual Public Comment	Refer to section 3.3 for comments concerning effluent discharge parameters.
Harbour Physical Environment, Water Quality and Sediment Quality	Appendix 11-B, panel 9 2 roughly outlines the effluent composition and percentage removal of chlorinated compounds by the treatment facility. I use the word roughly because the categories listed are very general organics, metals, chlorinated organics, etc and do not contain the actual chemical composition of each category. The mill has stated they cannot predict the chemical composition of the effluent because it is determined by the makeup of the wood being processed on any given day.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	As a landowner on Caribou Island, I am concerned for the water quality in the small harbour on the south side of the island, which has limited capacity to flush out hazardous material, which is likely to concentrate in this area where my small children swim.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	As a mitigation measure for potential damage to the treated effluent diffuser the report states that "Given the strong currents of the Caribou Channel at the outfall location significant diffusion is still likely to take place without the diffuser nozzle(s) in place;" While the Receiving Waters Study (Appendix E) indicates that effluent would predominantly be transported with offshore current there are several scenarios where far-field modeling results indicate effluent intrusion into Caribou Harbour. Given the proposed treated effluent discharge area is known to have ice present what is the likelihood of diffuser damage and what are the cumulative effects of treated effluent intrusion into Caribou Harbor? The report indicates that "Upon detection of any marine outfall pipe damage or diffuser fouling, repairs would be promptly performed;" the mill should be required to stop operations (cease effluent flow) in this scenario.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	As for a possible failure in the system where an accidental occurrence happens one must realize with the length of the pipe now extended to over fifteen Kilometers, that means there could be 100s of thousands of liters of Effluent that could be above legal allowable limits in the pipe. I see no plan in place to have this Effluent safely removed before it ends up in the Strait especially in winter. So just how would an accident of this nature be dealt with?	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	As part of the process here in the plant there is an intake pipe out in the harbour that takes water into the plant used during the cleaning process. The plant has many wells on site that are also used during the processing, but this is not enough water to support the plant. The intake pipe is necessary for the plant to operate. The water is tested regularly to ensure that it is cleared to use. This is a very sensitive issue as the plant is making a ready to eat product and there are obviously strict CFIA guidelines that are followed here. This intake pipe will be a mere few kilometers away from where the proposed effluent pipe is going. With a proposal to discharge 70-90 million litres of treated effluent from a bleached kraft mill every day this will obviously shut the plant down from using the intake pipe anymore for the necessary water to operate.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	As to the siting of the marine outfall to allegedly "minimize potential impact to marine water quality...". How can this claim be made when the constituent elements of the effluent and the concentrations of each have not been established?	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	At this time, it is only possible to identify candidate COPCs [contaminants of potential concern] that may be evaluated should a HHRA [Human Health Risk Assessment] of the project be a regulatory requirement. This is due to the fact that chemical process engineering design work is continuing and there is presently uncertainty regarding the likely chemical composition and characterization of the marine treated effluent discharge (including the potential concentrations of substances present in the effluent." As I am to understand this, there is no current certainty about what the effluent will actually contain.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	Concerns with this location that are not known include the affects that the shifting bottom will cause, the ability for the outflow pipe to remain free of mud and silt and the extent and characteristic of monitoring to ensure there are no issues.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	Current NPNS Mill Effluent Chemistry being down played yet they state the end state is unknown.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	Dispersion of the Effluent: Initially in the public presentations and diagrams shown we were told that the pipe would have the Effluent exiting through six port diffusers. Now it has become three. With this reduction to three ports that would mean that the exit flow of the effluent would be at a greater force and not spread over as great an area as with six diffusers. Thus making much of data given about dispersal of the Effluent would not seem to be relevant.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	Effluent composition is different if the mill is undergoing maintenance. Have levels of contaminants been taken into account during this scenario? I have not read anything regarding that in the proposal.	Individual Public Comment	Effluent will be treated to the same standards before discharge, regardless of the quality of the raw effluent. Further information on the Treatment process is available in Section 2.4 of the focus report, and in item #1 if the Addendum.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	Effluent sediment in Caribou Harbour would impact /reduce / eliminate prospects for existing and future non-polluting socioeconomic development. To add another source of sediment in the harbour and environs is short-sighted and an avoidable negative impact. The impact of the 25-37 degree effluent as a 15.5 km thermal heat pump is not addressed nor is the broad impact of cooling effluent in the strait and the currents created or altered by the diffusers and the temperature differential of the effluent and the receiving waters.	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	Effluent Volume: Dillion says they are using 85,00m3/day as worst case scenario and saying the daily average is 63,600 m3/day for their comparison. Yet In February of 2016, Nova Scotia Environment has said it had resolved the outstanding issue of an Appeal by Northern Pulp. In doing so it allows NP to take a daily maximum of 92,310m3/day. If this can be the case then the worst case scenario presented by Dillon is untrue and the plume will spread further and be of worse quality.	Individual Public Comment	Refer to section 3.2 for comments concerning effluent flow volumes.
Harbour Physical Environment, Water Quality and Sediment Quality	Events that would be catastrophic to the marine ecosystems include: 1) Structural failure of the pipe causing effluent to be released prematurely of the discharge location. 2) Errors in the receiving water study including tides, water flow, mixing characteristics at discharge location, lack of consideration for climate change effects will have on mixing characteristics.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	Footprint "Can the process fit on the mill property, without impacting adjacent natural features and property owners?" There is an omission that the part that doesn't fit on the property, namely the pipeline and the effluent coming from it, would have impacts on adjacent natural features and property owners. The term footprint is not sufficiently defined and skews the understanding of the degree of benefit being claimed by Northern Pulp. 2.4 "....potential environmental effects of the project have been considered for all phases of the project including those potentially arising from credible accidents, malfunctions, and unplanned events." Ship groundings and wrecks are part of the history of the CHB option but no mention in the assessment and no indication of updated , effective monitoring , for the effluent parameters and integrity of the pipeline and diffusers.	Individual Public Comment	Refer to section 10.1 for comments concerning an Archaeological Resource Impact Assessment for the marine environment.
Harbour Physical Environment, Water Quality and Sediment Quality	For damage by ice, ice scour, or malfunction from sediment, the diffusers will be checked by divers but no frequency is indicated other than annual.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	Given that each year there will be 1,489,200 kg of suspended solids released, the consequences should be addressed by the proponent. This is a serious deficiency in the proposal.	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	Here is a glaring and serious flaw in Northern Pulp's submission; it cannot be minimized and must not be ignored. At Section 2.3, page 11 is this statement: "Due to the EA Registration submission timing, the study period did not facilitate full biological field assessments for the current proposed transmission pipeline corridor."	Individual Public Comment	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	Here is an additional part that causes me significant concern. What exactly will be coming out of the pipe and dumping into the Northumberland Strait? How can we possibly know, when they don't even know.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	how the dilution ratios were calculated. On page 25 it is stated that the ambient salinity is 28 PSU, vs an effluent salinity of 4 PSU, and that a dilution ratio of 7 is needed to reach background levels of salinity. 7 is indeed the ratio between the effluent and ambient concentrations, but this number has little relevance for when the mixing product reaches ambient concentrations. 1 m3 of effluent contains 4 kg of salts/TDS, the content of 7 m3 of seawater is 7*28 kg. The total content of salts in 8 m3 of mixing product is therefore 200 kg of salts/TDS, or a salinity of 25 PSU. This is ~11 lower than the seawater, to reach 5 of seawater salinity a dilution ratio of 16 is needed, to reach within 1 of seawater a dilution ratio of 85 is needed. The QA section in Appendix E2 shows the correct formula for calculations, so why are not the correct dilution ratios applied in this section in Appendix F1?	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	Hypoxia zones are areas in the ocean that do not have enough oxygen in them to support aquatic life. Sea animals that are able, avoid these areas, those that cannot may suffocate and die. That is why these areas are also known as dead zones. If Northern Pulp is allowed to put their pipe in the Northumberland Strait it will create a dead zone.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	I am concerned the marine environment and ecosystem will be destroyed as well as our tourism industry. But most of all I am concerned with the health and wellbeing of everyone living in Pictou County.	Individual Public Comment	Refer to section 4.2 and Addendum 3.0 for comments concerning the receiving water study. The Project will meet environmental regulations and requirements, and the NPNS will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment. Furthermore, Section 7.3 examines the Key Marine Fisheries. Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Harbour Physical Environment, Water Quality and Sediment Quality	I have concerns regarding the proposed pipeline and project and the transparency of what the discharged effluent is comprised of. I would hope that this could be used as an opportunity to review the rules and regulations that Northern Pulp operate under. I hope that there is continued environmental monitoring put in place for the upgrade, cleanup, and continued operation of the the pipeline.	Individual Public Comment	NPNS will undertake a new cycle of Environmental Effects Monitoring (EEM). With respect to upgrade, cleanup and continued pipeline operation, these components will be directed by NSE under the facility's industrial approval to operate. Section 2.3 and 2.4 provide additional detail on what is in the treated and untreated effluent.
Harbour Physical Environment, Water Quality and Sediment Quality	I have grave concerns. The issue I have chosen to address in this letter is that of toxic chemicals being released into the Northumberland Strait. Using the numbers presented in the Project Proposal and Appendices, I calculate a total of approximately half a tonne of Adsorbable Organic Halides AOX per day will be released into the Strait. Appendix E3 1 reports that the maximum AOX in the effluent is 7.8mg/L. If we are conservative and assume only 60 million litres of effluent are discharged per day this would equate to 468 kg of AOX per day into the Northumberland Strait.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	I see firsthand every winter the huge amount of sea ice that comes into the strait and Caribou Harbour. The harbour and strait are very shallow in places. Just this fall we had a huge storm that moved the entire beach and armour rocks. With rising oceans being the new normal, the extremes are only going to get worse and this pipe will not survive.	Individual Public Comment	Geotechnical investigations and surveys have shown that ice scour is not present at the proposed diffuser location. Refer to Section 2.2. The pipe itself will be buried for protection.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	I was aware of 2 sunken ships in Caribou Harbour so did a scan of some public records and found not 2 but 22 reports of strandings and wrecks – a listing is attached. There were also 3 ferry crossing points from Caribou Island to “the mainland” years ago – one at the West end , one mid-island and one at the East end I don’t know if there is evidence of old wharf pilings at the East end of the island but there are at the other 2 locations. This information relates to Section 10.2.8 Discovery of a Heritage Resource. The Special Places Protection Act , Historical Sites & Monuments Board of Canada and the Heritage Trust of Nova Scotia also need to be considered for ensuring that the Marine Heritage of Caribou Harbour and area is not sacrificed.	Individual Public Comment	Refer to section 10.1 for comments concerning an Archaeological Resource Impact Assessment for the marine environment.
Harbour Physical Environment, Water Quality and Sediment Quality	I would also like to see specific studies regarding the potential intrusion and accumulation of effluent-borne contaminants affecting the water quality in Caribou Harbour, Caribou Rivers and other nearby tributaries. Given my experiences within these waterways, I can attest to the significant incoming tidal currents passing the proposed outfall boundary, pushing water into Caribou Harbour many kilometers upriver of Big and Little Caribou River and into various lagoons and saltwater marshes. I worry that the constant ebb and flow in this area could lead to long term accumulation of pollutants, which could be detrimental to the health of these sensitive and important ecological areas that are home to a diverse range of aquatic and avian life.	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	I would like to raise three separate points as to why I object to the pipe proposal, first of which would be the whole idea of pumping this so called treated effluent directly into the marine environment. Living in and fishing in this area for my entire life, I have observed that the proposed area of discharge is subject to extremely strong tidal flows. The theory behind changing proposals, as stated on page 33/34 is that the Pictou harbor area was not selected because it did not have enough tidal flows and that nutrients etc. could build up in the harbor and over time become harmful. The key here to me, are the words over time. This means that these chemicals in certain amounts are harmful, because over time they would accumulate. This statement also applies to the proposed outfall, because even though the area is subject to more tidal flow, therein lies the problem. The tide will go out and move the effluent and mix it, but then what will happen when the tide comes back in? This tidal flow can be confirmed, because whenever we are fishing, and someone loses a buoy, marking where their traps are located, it can normally be found further along the shore, by another fisherman, or even on the beach by a passerby. The tide coming in will already have the effluent in it and be subject to accepting more effluent from the pipe, and therefore, will start to accumulate, essentially causing the same problem that northern pulp was trying to avoid with the change of outfall location.	Individual Public Comment	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	Ice Keel - The Northumberland Strait is well known for significant ice development and accumulation in the winter season. In a comprehensive study of ice keel data from the Northumberland Strait, Obert and Brown 2011 report average ice keel depths of 2.94 m with a maximum of 8.49 from the PEI bridge. The EA cites a NS Museum of Natural History report 1996 that states that coastal lagoons in the Northumberland Strait area are protected from ice scouring. The outfall for the effluent pipeline is located beyond the mouth of Caribou Harbour and therefore this statement would not seem to apply. Even the ice keels in the Caribou Harbour mouth region were significantly smaller than those noted above, it seems plausible that damage to the pipe could happen by ice keel scouring in the winter months.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	Ice scouring was a major factor that prevented the first plan from working. Ice scouring and ice build up is an occurrence throughout the Northumberland Strait. Stantec's research has shown there to have been 133 features during their 2015 survey that was completed for the PEI-New Brunswick cable interconnection upgrade project (15). Just to reiterate the point, Northern Pulp have not completed their assessments on this and again have concluded there will be no adverse affects.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	If we assume the regulations are acceptable for environmental health, the allowable concentration or pH, salinity, temperature, etc. limit does not mean 2 metres, or 8 metres, or 100 metres from the diffuser. Allowable concentration means the effluent should be at or below the legislated concentration prior to exit from the diffuser. Dilution into the receiving water should not be used for justification.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	Im worried about the unknown characteristics of the effluent.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	In near field portion of the receiving water study Stantec states "No historical water quality data are available for Northumberland Strait around the CH-B location. Data from the neighbouring Pictou Road (Stantec, 2017) located about 6 km southeast were used." (Stantec, 2018). While in the far field portion of the study they simply extended the boundaries of the previous model created for the previous outfall location in the original study that was completed for Pictou Harbour (Stantec, 2017). I will not attempt to touch on the technical data within the receiving waters study as I do not have the educational background to do so. I will however pose the following questions: Has adequate field investigations been carried out to ensure the results of these models are correct? Is stating there was no historical data thus we used data from our previously studied location sufficient? Should actual water sampling have been carried out at the actual location? Is this project being fast tracked? The study concludes that "The effluent discharged at the CH-B location is predicted to be dispersed and transported predominantly with offshore currents in the northwest and southeast directions. The effluent intrusion into Caribou Harbour is predicted to be minimum." (P.27 Stantec 2018). With what level of confidence can they make this statement while some data was simply pulled from the original location of Pictou Harbour? Have they modelled the bottleneck effect that all fishermen are aware of?	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	In Northern Pulp's proposal for a new effluent treatment facility I have found no mention of the impact of one tonne of solids to released daily into waters at the entrance to Caribou Harbour. In section 7.4.1 of Northern Pulp's registration document prepared by Dillon Consulting, there is no mention of a survey of Caribou Harbour or any studies of how water flows in an out of the harbour. The effect of the introduction of a massive infusion of water estimated to be over 62,000 cubic meters on a daily basis combined with a tonne of semi solid material has not been mentioned let alone analysed in terms of its impact on the harbour itself. Instead, Table E1.1-1 the claim is made that there will be No Significant Residual Environmental Effect Predicted. To anyone who witnesses the way Caribou Harbour subtly changes almost on a daily basis this seems to be an audacious claim. Caribou Harbour is a living entity and as such will be affected by the introduction of an effluent pipe.	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	In those 1700 pages there are many issues to comment on. Among other issues, there is the lack of critical information on effluent composition and on the majority of the VECs, the absence of water analyses from Caribou Harbour, and the use of baseline water data from Pictou Harbour as "proxy" -- which Northern Pulp itself admits is more polluted than Caribou Harbour -- and the very strange use of an HHE report based on a human health risk analysis of a mill-that-never-existed. I would have thought those omissions would have led you as Minister to refuse registration of the project documents as incomplete. But that did not happen, so I would hope these serious omissions will stand as red flags to your department now.	Individual Public Comment	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	It claims that there will be 4.8 grams/liter of effluent. If this is pumped at the maximum of 85,000 cubic meters per day, this would equal out to be over 4 tons of suspended solids per day. Where will those suspended solids go? Do they disappear? This process will not just stay in the immediate outfall site, pumping such a large amount of effluent will begin to displace the water already occupying that space, and the affected area will begin to grow, magnifying these adverse impacts to a much greater area than is indicated in the Northern Pulp document. This relatively simple concept is a blatantly overlooked by northern pulp, who seem to be employing the "tides will take the effluent away and then it won't be our problem anyway" and that is just unacceptable.	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	It should be noted that this proposed outfall site was chosen late in 2018, and appears to have not undergone any detailed analysis of a baseline water quality analysis the area. the Pictou Harbour water quality data is being used as "a proxy for Caribou Harbour with respect to water quality, in the absence of available water quality data for Caribou Harbour)" Using Pictou Harbour as a baseline is contradicted in 9.2.1 stating that Pictou Harbour and other surrounding areas are prohibited from local shellfish harvesting due to water quality issues whereas in Caribou area "there are several active recreational and commercial fisheries in the area and there are also currently four provincially licensed marine shellfish aquaculture operations (all for American Oyster) in the vicinity of Caribou and Munroes Island, which are located relatively near to the location of the proposed effluent diffuser (CH-B)." The fact that a commercial bivalve fisheries exists in this area and are prohibited in the "proxy" reference area is evidence enough of the dissimilarities that should warrant that specific baseline measurements are performed in the new outfall location.	Individual Public Comment	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	Marine Environment 5th bullet refers to protecting the pipeline from ice scour but doesn't address diffuser protection. This would be an oversight and an error with negative consequences.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	My fishing grounds are the waters along Caribou Island. It is an extremely fragile area. It is extremely sensitive to water temperature changes. If we get a Nor'easter the water becomes brown with sediment. It takes several days for the sediment to clear and fish to return. Northern Pulp proposes to dump 90 million litres of effluent per day on this area. Northern Pulp estimates that the propose pipe will dump 48mg of Suspended Solids per litre into the Strait. For a grand total of 4.32 tonnes of Suspended Solids per day. This is daily. That is 1,576 tonne per year. The area will never have a break / never be given a chance for it to recover. The long term effects of this have to be studied.	Individual Public Comment	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	Northern Pulp can only estimate what the chemical composition will be for the effluent. They claim this information will be not be known for certain until the new facility is operational. Yet they tell us there will be no adverse environmental effects. By this time it will be too late. We are to believe them that everything will be fine. Their poor environmental record tells us otherwise, major leaks in the effluent pipe, numerous failed air quality tests and ash slurry spills. None of their antiquated equipment was replaced until your Department told them to.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	Northern Pulp has never identified the constituents that are in this effluent; the company has refused to do so.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	Northern Pulp has not identified what will be in their effluent so how can they know it will be safe? How can they realistically claim their effluent will have no environment effect 2 metres from the end of their pipe? They have not collected data from Caribou Harbour; they are using data they collected from Pictou Harbour. This is insufficient. The waters in the area have not been surveyed. The specific route of the pipeline is unknown.	Individual Public Comment	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	Northern Pulp has not identified what will be in their effluent so how can they know it will be safe? How can they realistically claim their effluent will have no environment effect 2 metres from the end of their pipe? They have not collected data from Caribou Harbour; they are using data they collected from Pictou Harbour. This is insufficient. The waters in the area have not been surveyed. The specific route of the pipeline is unknown.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	Northern Pulp hasn't identified in their EA application, which toxic chemicals and heavy metals will be in these solids. How can scientists and regulators study the effects this effluent would have on marine life if they do not know what is in it? Your decision should be based on science but there is no science here.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	Northern pulp say there will be "no significant environmental effect". Referring to the canadian environmental protection act: kraft mill effluent has significant effects on aquatic life. Effluent is toxic. Northern Pulp says that they don't really know what the chemistry of the effluent will be. We have heard this before and seen the contamination from leaks and now in our air. Mercury, furans and dioxins found!	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	Northern Pulp states that effluent from the new system, including an added oxygen delignification system, will be similar to treated effluent leaving the present system at point C, with some unspecified reduction in biochemical oxygen demand BOD. However, the effluent being released from the proposed new system directly into the deep waters of the Strait will not benefit from the considerable reduction in BOD, Total Suspended Solids TSS and other contaminants including heavy metals which takes place during the 20-30 days that effluent presently remains in the Boat Harbour Basin stabilization lagoon. Northern Pulp has not provided a detailed comparison between the effluent which presently reaches the edge of the Strait and the effluent they propose to release into the fishing grounds with the new system. The present effluent outfall location at the shore edge does not disperse effluent in the Strait in the same way that the proposed new outfall site would	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	Northern Pulps receiving water study is based on dated modeling of the Northumberland Strait. This modeling, to have any chance at accuracy, needs to be made current.	Individual Public Comment	A receiving water study has been conducted on the area during spring/summer 2019 with the most recent available data.
Harbour Physical Environment, Water Quality and Sediment Quality	NPNS explains on" Page 67 and 68 Table 4.2-4 " why is cannot go into Pictou Harbour and the Middle River. NPNS is saying that Pictou Harbour will become another Boat Harbour because it has limited mixing.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	Of all the loads the pipe will experience, ice loads present that largest risk to the structural integrity of the pipe. Potential failure of the pipe due to ice could occur from one of two mechanisms: 1) Direct impact causing a ductile failure (high amount of stress over a relatively short time), 2) Cyclical loading causing a brittle failure (stress levels lower than the mechanical strength of the material induced repeatedly over a relatively long time) (Zhang, 2005). Brittle failure due to ice impact could occur if any of the following project tasks are neglected: complete a site survey of ice conditions, complete a hydrographic survey depicting any potential ice scours, bury pipe at an adequate distance to account for extreme ice event. Although Northern Pulp shows a pipe buried with cover of approximately 2 meters, they have not completed any of the pre-design field work required to ensure that the pipe is not at risk of failure. When determining extreme ice scouring events, it is also recommended that ice scour surveys be carried out more than once, spaced out over time to gain an accurate depiction of the ice and seafloor interaction	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	On an incoming tide, especially as the current at this point circles clockwise, a good portion of the effluent will flow into the harbour; and whatever solids that are in the effluent will likely settle on the shallow shores, possibly edging Caribou Harbour towards becoming another Boat Harbour. It is clear that the proposed plan B water route has not been surveyed nor sampled.	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	On page 56 of the EA document Northern Pulp makes a very cursory reference to necessary approvals for the dredging required to put the pipe in the Northumberland Strait. It is not satisfactory that Northern Pulp be considered for EA approval at a provincial level when they have not submitted their dredging plan for approval for by the Federal Government. There are a number of Federal regulations which impact on dredging permits including but not restricted to: Fisheries Act, Navigation Protection Act, and the Canadian Environment Assessment Act. Northern Pulp should be required to pass these approvals for dredging prior to consideration for approval by the NS Dept. of Environment. In particular, as in the case with dredging in the St. Lawrence Seaway which was subject to the aforementioned Federal Regulations, Northern Pulp has no way of ensuring that toxins, contaminants present from past industrial activities in the Ferry Terminal area at Caribou would not be disturbed as a result of the pipe installation	Individual Public Comment	Refer to section 2.5 for comments concerning proposed changes to the pipeline construction methodology and other associated pipeline work, related to the potential changes to the marine portion of the pipeline route.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	Physical Hazards Sedimentation The Northumberland Strait coast of Nova Scotia is a dynamic marine coastal environment with longshore drift transporting and depositing sediments typically from West to East. This is particularly evident at the mouth of Caribou Harbour where a large sand bank occupies much of the western side of the mouth. This is clearly visible through satellite imagery for the area and is the cause for the requirement to dredge the navigation channel for the PEI ferry that departs from Caribou Wharf. The development of a significant sandbank on the lee side of Caribou Point is entirely expected where longshore drift is a dominant process and environments such as this are highly mobile sedimentary environments. This represents a burial danger for the diffusers which would impact the effectiveness of the assumed dilution of effluent in the water column. If the diffusers cease to work as designed, concentrations of effluent could exceed the CCME guidelines for Marine Aquatic Life causing fish kills. the process of monitoring the condition of the diffusers is greatly diminished if it becomes buried. The prospect of having to excavate sediments to ensure the diffusers function as designed risks damage and further degradation of the marine environment. This was not addressed in the EA.	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	Physical Oceanography The EA is deficient in describing the physical oceanography of the local environment. Assessments of salinity, temperature and tidal currents are based on measurements and models for the entire Northumberland Strait and southern Gulf of St Lawrence. For a project whose potential effects may have such a profound influence on the marine environment of such an enclosed bay and whose effects, in large part, are determined by physical oceanographic processes, there is a striking lack of detail and analysis. The understanding of tidal currents for the area is entirely insufficient. The EA cites modelling of tidal currents from DFO in Figure 8.11-3 which covers the entire Northumberland Strait without providing any additional context or information. The semi enclosed nature of Caribou Harbour presents a localised complexity with understanding the tidal pattern in the region. This was not addressed in the EA.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	Pipe Installation "Removal and disposal of dredged material is not anticipated." The 4.1 km long, 3 metre wide trench for the 1 metre pipe will displace seabed material. The 2008 ferry dredging under Transport Canada's jurisdiction was barged and disposed on land. What information was not included in the application to explain why there would not be removal and disposal? Land to Marine (Near Shore) Connections "The near shore portion of the pipeline will require planning and management of worksite construction and logistics affected by water depth, fluctuating tidal levels, and ice scour." The application does not indicate why this would be acceptable at CHB but not at Pictou Harbour less than 6 km. away - a conflicting unsupported statement.	Individual Public Comment	Refer to section 2.5 for comments concerning proposed changes to the pipeline construction methodology and other associated pipeline work, related to the potential changes to the marine portion of the pipeline route.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	Please note that the map used in the Executive Summary does not show Gull Spit as a notable geographic feature. The Canadian Hydrographic Services nautical chart used by Makai Engineering in Appendix F, Figure 1 shows only half of Caribou Harbour but does indicate the presence of Gull Spit which relates to the narrow silting harbour entrance. A nautical chart shows water depths, land elevations, North orientation, marshlands, tidal information, watercourse feeding Caribou Harbour. Without Gull Spit noted, the map in the Executive Summary implies a wider harbour entrance.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	Project schedules where applicable: I am unsure how this pipe line would be able to fit into nearly a few feet of water, where known sandbars are found within the channel of where this pipe would be settling at. Known ice scours are also another factor, and I am unsure how a plastic pipe would be monitored or saved from major ice which is published by studies in the Northumberland Strait for holding true power to destroying large equipment in recent history.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	Second - NP have not stated what will be in the effluent when it comes out off the pipe into the Strait.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	Summary of the Significance of Project-Related Residual Environmental Effects, page xxxiv, it is predicted that the project, during all phases, will have no significant effect on any component of the environment. However, no where is it stated exactly what will be the composition of this effluent that they propose to continually pump into the Strait, day in and day out .... until something goes terribly wrong. And that may not take long, given that there has been no study done to determine the potential impact of this effluent of unknown composition on lobster larvae. This deluge of materials and chemicals cannot and will not simply "disappear" with no adverse effects. Indeed, it is entirely possible, perhaps even probable, that this action will cause significant adverse effects to environmental health, to human health and to the economic health specifically of the fishing and tourism industries and also to other individuals and businesses whose livelihoods depend on the well-being of these major industries.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials. The Project will meet environmental regulations and requirements, and the NPNS will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment.
Harbour Physical Environment, Water Quality and Sediment Quality	Temperature of Effluent: The temperature of the wastewater from the proposed pipeline from the Pulp Mill across the Pictou Harbour and out to Northumberland Strait is estimated to be 25 C in cooler months to 37 C in warmer summer months. All 70 to 90 million litres. This being flowed into 15C N. Strait water will gradually warm the coastal waters the larvae live in. Every degree above 15C will shorten the life of a cold water lobster larvae. When the temperature reaches 16.5C survival rate lowers until at 22C none survive.	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	The application does not support why Caribou Harbour was clearly deemed better than the Pictou Harbour site even in Table 6.7-1. Nor did it illustrate an overlay of nautical maps of both sites to clearly show Caribou Harbour as inferior to the already rejected site. The statement does confirm that when Northern Pulp uses the term "treated effluent" or "treated wastewater" throughout its application and in public engagement, that when treated, the effluent will accumulate and concentrate residual contaminants over time. The distance between the 2 points is less than 6 km. An average walker can do that distance in an hour and a half. If compared by modelling for an average current, the time from effluent outfall would be less than that.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The characteristics of the proposed effluent is unknown to Northern Pulp. This is unacceptable.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	The chemical characteristics of the proposed effluent is unknown to Northern Pulp.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	The current proposal is full of models, assumptions, and simulations yet in the final analysis we cannot tell what will happen to the Northumberland Strait marine environment and its fisheries and our health should the toxic effluent pipe be approved and constructed.	individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Harbour Physical Environment, Water Quality and Sediment Quality	The descriptions provided of the area around Caribou Harbour are very general relying on regional scale syntheses and existing reports that focus on existing data which in many cases are quite old see for metal concentrations in sediments on Table 8.11-1 from 1990. Any monitoring of the marine environment and assessment of the impacts particularly potential ongoing impacts should have a robust baseline dataset. The EA clearly does not have purposely acquired primary data and relies on inapplicable, insufficient or inappropriate datasets and studies.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	The document states there is no detailed design available for the main effluent outlet, and that the proposal in the Registration document was prepared without field work in the marine environment.	Individual Public Comment	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	The effluent at the outflow of the pipe is going to come out at 25c in the Winter and 37c in the summer!!(The natural water temps of the Strait reaches 15C in the summer ) These temps will absolutely change the diversity and make up of this sensitive and important marine ecosystem. This will increase the overall temperatures of the Strait over time due to the high volume of effluent being pumped a day.	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location.
Harbour Physical Environment, Water Quality and Sediment Quality	The effluent concentrations are not described or defined. Different components e.g. dissolved solids, metals, organic material etc. will behave in a different manner in the water column and this was not accounted for.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	The effluent will be more dangerous than the current Boat Harbour because of polishings. Toxins that will accumulate over time have not been addressed (The Department of Environment has said that the current level of toxins already don't meet current standards.)	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	The effluent's proposed outfall location is a particularly poor one. On the western side of the proposed outfall, the Caribou Island lighthouse is less than a couple of kilometers away.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The ETF proposal states that the temperature of the treated effluent will reach ambient temperatures within 2 meters of the diffuser and therefore will comply with CCME Guidelines for temperature. This is a mis representation of the CCME Guidelines, which state, "Human activities should not cause changes in ambient temperature of marine and estuarine waters to exceed +/- 1 degree Celsius at any time, location, or depth".	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The failure to take ice scour into account in the current pipe models	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	The first crisis is the DE oxygenation of the Gulf of St. Lawrence (Northumberland Strait) water. a "In the Gulf of St. Lawrence, Oxygen in the lower depths has dropped by 55 per cent since 1930. We feel this issue has to be looked at and deserves more attention," said Denis Gilbert, one of the 22 co-authors and a Scientist with the Department Fisheries and Oceans. The Gulf of St. Lawrence is rapidly losing Oxygen faster than almost any other marine ecosystem.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The further concerns I have are that Northern Pulp cannot even say what this discharge of so called treated effluent will contain. What is the chemical composition and how much solids go with this daily discharge?? How can they not be 100 certain on this now but expect us to approve of their weak proposal to discharge it?? Are we seriously thinking pumping up to 60- 90 million liters of heated fresh water into a salt-water environment will not do irreparable harm to our fisheries and aquatic lifestyle?? Where is the 1 ton of expected solids going to go, let alone the plume of effluent in our waterway?	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	The impact of the effluent dumped into the Northumberland Strait	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The lack of certainty in the effluent composition has obvious concerns as to how the environmental risk assessment was modelled by the company. Without knowing the composition of the effluent, how can the effect on the environment be measured. 87 million litres of treated effluent with an unknown chemical composition is to be discharged daily into the ocean and across the board they predict no significant effect. This indicates to me that no accurate modelling was completed by the company and that they clearly do not respect this province's environment, nor intelligence.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	The lack of specific detailed information about the content of this future effluent to be piped into the Strait.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	The long term impact of millions of litres of effluent a day going into the body of water, needs to be studied and reviewed for impact on water quality, ocean biology impacts, breeding and health of the fish and shellfish, human health including swimming and consumption of fish.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The modelled ambient flow directions shown in Figure 3.1 of Appendix E show a dominant northwest direction flow. This is counter to local knowledge and the stated understanding cited in the EA itself. The current in the Northumberland Strait generally flows in a southeasterly direction between New Brunswick and Prince Edward Island PEI Nova Scotia Museum of Natural History 1996. see pg 338 of the EA.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The modelling in the Receiving Water Study which used July 2016 conditions shows that outfall effluent would be inside the harbour. Yet in the application, there is no mention of the flushing capacity of the harbour. A mussel farm license was rejected approximately 18 years ago due to inadequate flushing.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The modelling results indicate that there are few isolated traces of relatively high diluted effluent after a period of 30 days see pg 350 of the EA and figures 2.5 to 2.13 of Appendix E, but effluent discharge will be continuous. If a continuous flow is assumed, it is physically impossible for there to be an isolated concentration of the effluent away from the discharge location.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The Northumberland Strait has a very shallow channel so there is so concern the water is just not deep enough for a pipe. The Nova Scotia/PEI ferry travels this route so what effect will this pipe and effluent have on this service provided to residents and tourists during the summer months.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	The Northumberland Strait proposed area has not been thoroughly studied. The research is for the Pictou Harbour proposal. The elements that led to the rejection of the proposed Pictou Harbour site are present at the new Caribou Point proposed site. Caribou Point is extremely shallow water. It is location of commercial and recreational fishing, as well as home to migrating birds. No information is provided on the significant effect daily distribution of effluent would have on this area.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	The NP Proposal does not adequately address where the effluent mass being delivered at the diffusers will end up once it enters the Northumberland Strait. Every molecule of effluent will remain in the strait/ocean waters unless vaporized into the atmosphere.	Individual Public Comment	Refer to section 3.3 for comments concerning effluent discharge parameters.
Harbour Physical Environment, Water Quality and Sediment Quality	The NP Proposal provides projected estimated composition of effluent leaving the diffusers at Table 5.5-1. It is then purported that this effluent "...will meet ambient water quality (current background) at the edge of a standard mixing zone." This critical section of the proposal is lacking in detail and does not explain where the extraordinary volume of effluent matter that will be continually exiting the diffusers will go.	Individual Public Comment	Refer to section 3.3 for comments concerning effluent discharge parameters.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	The outfall area is .9 km from Munroe’s Island and roughly three km away from the Pictou Lodge. This effluent and toxic solids (TSS) is going to settle somewhere. With the tides and winds, how can the effluent and toxic solids not wind up in the eelgrass and seaweed, eventually landing on the beach from Munroe’s Island to the Pictou Lodge? It will only be a matter of time before this area would not be safe for swimming and affecting the life of animals that exist on Munroe’s Island. Prior to Boat Harbour being built, the Pictou Harbour Lighthouse beach was a fantastic place for swimming. It is very close to where Boat Harbour enters the Strait Now it is not safe for swimming because of the effluent from Boat Harbour. The outfall diffuser location is also an area of concern. The proposed location of the outfall diffusers is just beyond the inlet to Caribou Harbour. This area is known to have issues with sedimentation, infilling, and ice scour. It is not clear from the EA filing if this has been considered and how infilling may affect the performance of the diffusers.	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	It is conceivable that it could result in blockages that would disrupt the diffusion patterns that are needed to ensure proper mixing to get the effluent within the legally required tolerance levels at the prescribed distances from the outflow pipe. As there is no information on the spatial and temporal distribution of fish migration routes or congregation points it is difficult to predict how changes to diffusion patterns could affect salmonids and other species. Additionally, the concealed nature of the diffusers means that issues with the effluent or with the diffusion pattern may not be detected in a timely manner.	Individual Public Comment	Refer to section 3.3 for comments concerning effluent discharge parameters.
Harbour Physical Environment, Water Quality and Sediment Quality	The outfall location is located just off the Caribou Harbour channel and the accumulation affects from the suspended solids in the effluent is another huge concern. One of the first meeting with Northern Pulp and the fishers was held at the Pictou County Wellness Center in early December of 2018. At this meeting KSH solutions stated when asked the following question "Where does the heavy solids go?", his response was, " Away". Well on page 84 of the EA document, Table 5.6-1 the total suspended solids (TSS) is 48 mg/L . When you do the long hand and work that out for their daily water usage of 85 million litres a day that is just over 4 tons of solids sent out into the Northumberland Strait daily. This is unacceptable. Four ton of solids won't just go away as KSH stated. The accumulative affect and build up is unknown and needs to be addressed.	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	The pipeline location proposed by Northern Pulp presents various challenges that must be addressed to ensure the structural integrity of the pipe. As previously stated, the bottom has been observed by fishers to consist of soft sand and mud bottom with small pockets of hard bottom. With no geotechnical investigation carried out by any of Northern Pulp's consultants it is unknown how deep the soft bottom continues. This raises the concern of non-uniform settlement of the soil that will be supporting the pipe. Due to the pipe being placed in a pre-dug trench during the construction phase it is likely that the pipe will experience increased installation deflections due to the trench quickly being filled in with sand due to wave and tidal action, thus creating discrepancies between design pipe elevations and as built pipe elevations. The pipe is also likely to experience increased in-service deflections over time due to the pockets of hard bottom creating a point of solid support while large portions of soft bottom allow for settlement and pipe sag. These deflections will induce increased compressive and tensile bending stresses within the pipe wall resulting in bending strains.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	The plan is to extend the pipe about 4 kms from the shore through Caribou Harbour to an outflow location that appears to have a depth of about 40-65 feet made of mud, sand and rock (13). To put this depth into perspective, 60 feet 6 inches is the distance from home plate to pitcher's mound on a baseball field. That's deeper than the original outflow point near Pictou Road but still not very deep. This is adjacent to the PEI ferry route and requires routine dredging do to shifting sand and silt. Dredging generally seems to be done approximately every 10 years (14). The end of the pipe itself will have three ports with a plan of dispersing the effluent, that as described by NP's technical engineer in the preamble, will be worse than what is coming out of Boat Harbour now. In the EA it states that the characteristic of the effluent will not be known until project completion. They know it will be worse, but don't know how bad and can't submit a testimony to that quality in time for NSE to make a ruling on whether it is okay for an ETF with a capability of producing up to 85 million litres of that unknown effluent each and every day.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	the prediction for algae effect in Caribou Harbour won't occur until "after" the pipeline is commissioned. There is no indication in the application as to how this could be mitigated after the fact. Would the pipeline be closed or continue to be permitted to pollute if testing post commissioning determined issues not in keeping with the predictive modelling?	Individual Public Comment	The operation of the facility would be required to meet NSE approval requirements.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	The project proposes to release the effluent at a depth of ~20 m. The registration Document Section 8.11.2.2 states that the in situ salinities are above ~28 PSU, with temperatures varying over the annual cycle, from below 0° to 3°C in the coldest period to average temperatures of 17-18°C during the warmest periods. The effluent is warmer 25-37 °C and less saline ~4 PSU than the ambient conditions throughout the year, and will therefore have less density. As a consequence, the effluent and mixing products of effluent and seawater will rise toward the surface until the density of the mixing product equals ambient densities at that depth. Subduction of fresh water is used in other parts of the world to effect transportation of nutrients from depth toward the surface in vertically stratified systems. Vertical stratification in the Northumberland Strait seems weak based on results presented, so the vertical advection set up by the diffuser system will probably have marginal effects in terms of transport of naturally occurring nutrients. It will however very likely lead to an efficient mixing of the effluent with seawater, at higher dilution ratios than used in the calculations below in order to bring mixing product densities in line with natural densities, the numbers used in the circulation calculations below are therefore conservative.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The projected Total Suspended Solids is 48mg/L. If 85 Million Litres of Effluent is processed per day, that equates to around 4 Tonnes of TSS per day into the Strait. Even if that meets the 25 year old PPER, it still poses a major risk to the marine species in that area.	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	The proposal calls for the pipe to go underwater at Caribou Harbour and run out into the Strait for 2.1 KM. They do understand that the Caribou Harbour by simply viewing the Marine Chart Quite it dramatically shows that the greater majority of the harbour is less than 5 meters deep and the bottom is a shift and moving sandbar. It also has a busy Ferry Terminal that uses a Channel for the Northumberland Ferry Service to Move in and out through. This Channel gets dredged every few years, so having a pipe run anywhere close by would be detrimental to not just the ability to dredge, but also the possibility of pipe damage due to dredging.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	The proposal claims that "operation of the outfall will not interact with use of community beaches in the surrounding area." This statement appears to contradict the results of the Stantec Final Caribou Discharge Receiving Water Study found in Appendix E1 which shows effluent concentrations washed ashore in various areas. For example, Figures 2.7 and 2.9 shows effluent on the beach at Munro's Island. Figure 2.11 shows effluent at Caribou Island I suggest that the presence of effluent in any form on any beach or shoreline will interact with the use of community beaches.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The proposed effluent has not been fully tested. In the proposal the effluent is expected to be of a certain quality not guaranteed.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	The proposed effluent pipeline routing is along the western edge of the dredged navigation channel. This channel is dredged on a relatively frequent basis. The dredging operation typically takes the form of a large excavator on a barge a rather imprecise procedure. The possibility of damage to the pipeline by dredging operations would seem quite high.	Individual Public Comment	The pipeline will be properly located and charted on the nautical maps. The pipeline will not be located inside of the ferry channel.
Harbour Physical Environment, Water Quality and Sediment Quality	The proposed NP pipeline marine portion of the 15.5 km route would run parallel to the ferry channel. In pipeline construction, 4.1 km of a trench 3 metres deep and 10 metres wide would increase sedimentation in the harbour and off of Caribou Point. The description of armour stone to cover the proposed pipe could also change the sediment patterns in the harbour and off of Caribou Point : creating a new artificial "reef(s)" that crosses the harbour perpendicular to the harbour entrance and then parallel to the Caribou Island south shore. Gull Spit at the harbour entrance is a significant feature as is the Nature Preserve, Munroe's Island (opposite Gull Spit) which is part of the Caribou Provincial Park.	Individual Public Comment	Marine construction effects are assessed in Section 7.3.
Harbour Physical Environment, Water Quality and Sediment Quality	The real dangers of ice in the shallow waters of the Strait also pose a significant threat to an underwater pipe. According to a report from the Canadian Coast Guard on Ice Climatology and Environmental Conditions (CCG, 2012), ice rafting is a frequent occurrence. In this case, huge sheets of ice can drift or be blown up to override each other and form stacks along the shoreline. In addition, ice scouring along the shallow bottom poses a risk to pipelines, outfalls, diffusers and submarine cables. There is no section of this report that addresses eventual ice scour or ice rafting and the definite damage it would do to a pipe spewing effluent in to the Strait at shallow depths.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	The Registration Document for Northern Pulps proposed effluent treatment plan fails to provide critically important information which is essential to proper environmental assessment. It states on page 502 there is presently uncertainty regarding the likely chemical composition and characterization of the marine effluent discharge.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	The report indicates that "Due to uncertainty regarding effluent composition and approximate concentrations of substances present in the future treated effluent (which will not be verified until the project is operational), the identified candidate COPCs in effluent are considered preliminary at this time." How can cumulative human health and environmental effects be determined to be non-significant given that the chemical composition of the treated effluent is not fully known?	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	The report states that "...any potential environmental effects on water quality during the operation and maintenance phase will be highly localized." and "that water quality at the end of the mixing zone for the three-port diffuser will reach ambient conditions within less than 2 m from the diffuser in terms of total nitrogen, total phosphorus, DO, pH, temperature, and salinity. Colour will return to baseline conditions within 5 m of the diffuser." What is the cumulative effect of absorbable organic halides (AOX) which include Dioxins? As per the Receiving Water Study background concentrations of AOX is n/a (assumed to be negligible). The treated effluent contains a concentration of 7.8 mg/L of AOX with a concentration of 0.05 mg/L at the end of the mixing zone 100m from the diffuser. Given the high volume of treated effluent discharge at 62,000,000 L / day and the 50 year projected lifespan of the project what are the long term impacts of AOX presence above existing conditions? This is of particular importance given that AOX are known to be persistent and accumulate in the environment.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The report states that "Effluent quality will necessarily comply with all federal and provincial permit conditions and regulatory requirements such as PPER." Has a calculation been completed to confirm effluent will comply with the PPER? The PPER sets maximum daily and monthly limits on BOD and TSS based on the mill's reference production rate. What is the reference production rate for the mill? This information along with the concentrations of BOD and TSS in the treated effluent and flow rates (both provided in the EA report) could be used to calculate compliance with the PPER. This information does not appear to be provided.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	The report states that "It was determined in the receiving water study (Stantec 2018; Appendix E) that water quality at the end of the mixing zone for the three-port diffuser will reach ambient conditions within less than 2 m from the diffuser in terms of total nitrogen, total phosphorus, TSS, DO, pH, and salinity. Colour will return to baseline conditions within 5 m of the diffuser. Temperature will be within 0.1 °C of background at the end of the 100-m mixing zone." It is noted that given the project redesign initiated in fall 2018 no background water samples were collected from Caribou Harbour, therefore, background water quality data from the previous discharge location at Pictou Road (6km from the current proposed discharge site) was used. How can it be concluded that water quality will return to ambient conditions within 100m of the diffuser when no background water quality samples were collected in this area? Also no background information was collected for AOX, COD, or BOD. NSE should require the collection of background water samples from the proposed effluent discharge location before approving this project.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The shape of the dispersal plume from the diffuser as shown in figures 3.4 and 3.5 of Appendix E is utterly unrealistic. This suggests a numerical weakness in the model that undermines any confidence in its output. The tidal modelling and contaminant plume dispersal model is scientifically not credible and should at a minimum be subjected to rigorous peer review.	Individual Public Comment	Refer to Addendum 3.0 for an explanation about initial mixing and dispersal of the plume.
Harbour Physical Environment, Water Quality and Sediment Quality	The Strait already has several large dead zones due to nutrient overloading from many sources.	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	The Strait is shallow and ice scouring occurs in the Winter. This presents a huge risk for the effluent pipe to get damaged.	Individual Public Comment	Geotechnical investigations and surveys have shown that ice scour is not present at the proposed diffuser location. Refer to Section 2.2. The pipe itself will be buried for protection.
Harbour Physical Environment, Water Quality and Sediment Quality	The waste treatment proposal only addresses the BOD/COD, pH attributes of the waste waters. The off-gassing from sulphites/sulphides/oxides of sulphur, wear metals, inorganic chemical iron, nickel, chromium, cadmium, sodium sulphide, sodium sulphates pollution, and the huge thermal pollution issues are not addressed by the proposed plan of action.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	The waste treatment proposal only addresses the BOD/COD, pH attributes of the waste waters. The off-gassing from sulphites/sulphides/oxides of sulphur, wear metals, inorganic chemical iron, nickel, chromium, cadmium, sodium sulphide, sodium sulphates pollution, and the huge thermal pollution issues are not addressed by the proposed plan of action.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	There has been no public consultation on the proposed route of their 15.5 km pipeline along Highway 106, entering the marine environment near the Ferry Terminal at Caribou and proceeding out into Caribou Harbour where the effluent (of unknown composition) will be discharged into the prime fishing grounds of the Northumberland Strait. This is madness! It would truly be reckless to take such a risk adjacent to any fishing harbour, let alone the largest fishing harbour on the Nova Scotia side of the Strait, without consultation and further study.	Individual Public Comment	Refer to section 9.1 for comments concerning baseline studies for fish and shellfish tissue of key marine species in the vicinity of the pipeline diffuser location (HHRA).
Harbour Physical Environment, Water Quality and Sediment Quality	There is absolutely no guarantee that this system will actually remove all of the toxins. Even one of NP's own engineers says as much Chronicle Herald, Feb. 28: In an email between Northern Pulps technical manager and Dillon Consulting, a Toronto-based consulting firm, written on Nov. 29, 2017 the technical manager said in reference to the effluent coming from the proposed Northumberland Strait pipeline, some say effluent quality will be worse than today because of all the polishing that is happening across the Boat Harbor basin and they are correct to some extent.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	There is no mention in the NP Proposal of how the models utilized by Stantec were validated, yet numerous assumptions/conclusions regarding the performance parameters of the proposed project are presented.	Individual Public Comment	Refer to section 3.3 for comments concerning effluent discharge parameters.
Harbour Physical Environment, Water Quality and Sediment Quality	There is no mention of the impact of pipeline construction sedimentation to accelerating the next channel dredging timeline or whether the contents of effluent sediment will curtail or complicate the ferry channel dredging in the future. The ferry is the only direct connection between PEI and Nova Scotia. Both provinces emphasize the natural setting and recreational activities in tourism promotion. The ferry interacting with the effluent plume is not addressed in the application; for example: colour, odour, froth and aerosolizing of the effluent – potential negative impact to the iconic tourist experience that reaches beyond the ferry ride. Pictou Island is experiencing success as a recreational destination and that ferry also operates out of Caribou Harbour.	Individual Public Comment	Refer to section 4.2 and Addendum 3.0 for comments concerning the receiving water study. The Project will meet environmental regulations and requirements, and the NPNS will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	There is no mention of the impact of pipeline construction sedimentation to accelerating the next channel dredging timeline or whether the contents of effluent sediment will curtail or complicate the ferry channel dredging in the future. The ferry is the only direct connection between PEI and Nova Scotia. Both provinces emphasize the natural setting and recreational activities in tourism promotion. The ferry interacting with the effluent plume is not addressed in the application; for example: colour, odour, froth and aerosolizing of the effluent – potential negative impact to the iconic tourist experience that reaches beyond the ferry ride. Pictou Island is experiencing success as a recreational destination and that ferry also operates out of Caribou Harbour.	Individual Public Comment	Refer to section 2.5 for comments concerning proposed changes to the pipeline construction methodology and other associated pipeline work, related to the potential changes to the marine portion of the pipeline route.
Harbour Physical Environment, Water Quality and Sediment Quality	These are tidal waters and are subject to significant storm surge which brings sediment up from the bottom and will wash ashore onto the land where our condo was built. A total of 31 other condos, the majority of which are owned by seniors will also be impacted as will the beaches of Caribou Monroes Island Provincial Park. The land upon which a total of 32 ground level condos are located is a waterlot Grant meaning that the Condo property extends out into Caribou harbour and must be recognized as Private property.	Individual Public Comment	Section 4.3 provides the sediment transport modelling for the project which identified impacts of potential accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	They have submitted a plan to pipe effluent into a vital ecological and highly stressed area of our ocean, that cannot endure further disregard, that has twice been rejected when submitted previously. Which also leads to the value for taxpayer dollars supplied to Northern Pulp, to recycle this twice rejected plan. It also casts doubts in every claim about about tight timelines. Doubts that cause anger. Was this recycled plan worth \$6 Million?	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	This is going to create a dead zone due to the following reasons. -The increase in water temperature (25 c winter and 37c summer). Now high for the summer might be 20c, an adult human would find 37 c to be uncomfortable. How is anything at a young critical stage going to survive? -The amount of effluent and toxic solids (TSS) -What is in the effluent which is unknown?	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	This is going to create a dead zone due to the following reasons. -The increase in water temperature (25 c winter and 37c summer). Now high for the summer might be 20c, an adult human would find 37 c to be uncomfortable. How is anything at a young critical stage going to survive? -The amount of effluent and toxic solids (TSS) -What is in the effluent which is unknown?	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	This is going to create a dead zone due to the following reasons. -The increase in water temperature (25 c winter and 37c summer). Now high for the summer might be 20c, an adult human would find 37 c to be uncomfortable. How is anything at a young critical stage going to survive? -The amount of effluent and toxic solids (TSS) -What is in the effluent which is unknown?	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	This TSS Regulation MUST be updated and can never be one size fits all. It must be tailored to the receiving water to permit any safety to our marine life.	Individual Public Comment	Refer to section 4.3 for comments concerning the physical and chemical properties and accumulation of sediment.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	Tides and currents running up Caribou Harbour can be strong and extreme. It is therefore not our belief that 85 of the currents will be off-shore and result in the disbursement of effluent further out into the Strait. Regardless of the volume and frequency of the prevailing currents, effluent will regularly enter into Caribou Harbour with each tide and whenever the currents are running inland. Effluent and the toxins within will not be effectively disbursed due to the size, depth and confinement of the harbour.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	Top of page 84: (Section 5.6.1 E) "The effluent is expected to meet requirements... But even if you put heated fresh water with NO effluent in it into the Strait in those quantities, we would have a vast warming of that ocean. We now have enough evidence now that the temperature of oceans are rising, and changing life/climate on this planet for the worse. If this effluent actually meets any requirements, then the requirements must be changed.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	Validation criteria are not mentioned in the NP Proposal, based on my own reading. Stantec has included simulated data on many effluent and pipe parameters. However, observed data is not included. For instance, with respect to the receiving environment – the baseline (current) water quality data is assumed to be the same at the outfall location as a previously considered location.	Individual Public Comment	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	Viewing reports through the FOI/POP request show that Dillion consultants raised the issue of heavy metals, such as metals and mercury and of Dixons and furans in the effluent. In January 2018, Dillion sent a list of questions to Northern Pulp, KSH consulting and TIR, saying it needed information on the "percentage of dioxins and furans in the final effluent going into the strait daily". In February 2018, Dillion again wrote to Northern Pulp reminding the technical manager of the need to acknowledge these substances, noting that questions have arisen regarding the content of metals in the discharge. So far, Northern Pulp cannot address in their proposal, the chemical characteristics or concentration of known chemicals in their effluent. I would like to understand in common language, how this would be acceptable in 2019. For an area where I live and breathe in, I am extremely frustrated that this level of arrogance to human health is allowed to be documented and presented in a formal means of proposal from a company	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials. An human health risk assessment has also been started, and the results of the HHRA's problem formulation are presented in Appendix 9.2. Furthermore, monitoring will be conducted as part of construction. Contingency plans will be in place to address contaminant if identified.
Harbour Physical Environment, Water Quality and Sediment Quality	Waste effluent at 35 degrees or more will enter the Northumberland Strait killing marine life. The projected waste path does not accurately address the thermal toxicity to marine life, the foul smelling oxides of sulphur by-products, chronic heavy metal contamination by the effluents.	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location.
Harbour Physical Environment, Water Quality and Sediment Quality	we asked Northern Pulp about ice cover and how it affects dilution and mixing	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Harbour Physical Environment, Water Quality and Sediment Quality	We do not know the ingredients. They will start burning contaminated sludge without a thorough study of emission concerns, the environment, the fisheries, sea life and tourism. All are at risk the strait can freeze so how will the warmth flow impact lobster spawning grounds. Much further studies need to be done.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Harbour Physical Environment, Water Quality and Sediment Quality	What chemicals are in the effluent?	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	what is in the effluent and where will this pipe end?	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	What is in the treated effluent that will be pumped onto our fishing grounds? It is not in the environmental assessment which states that the chemistry characteristics will not be known until the project is operational. This is a huge gap in the proposal, we do know that it contains dioxins, furans and heavy metals.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	What significance is given to the cultural and historical aspect of Caribou Harbour? What consideration is there for the fact that generations of families living in the area consider Caribou Harbour a sanctuary for wildlife, a safe harbour for swimming, kayaking and sailing? It is the location of the Monroe's Island wildlife reserve, the Caribou Provincial Park and the Pictou Lodge, which has been in operation since 1927. The area has long been identified as a major area for outdoor recreation. Pictou County is defined by the generations of families who have earned their living from fishing lobster and other species in the immediate vicinity of Caribou Harbour. Within the communal rights of people living in the area to the peaceful enjoyment of nature and the established right of fishers to work in the area, the designation of Caribou Harbour as a location for an outlet of industrial waste seems to afford Northern Pulp a disproportionate right to the use of the waters of Caribou Harbour. This access threatens other citizens with the potential for an environmental disaster, the loss of livelihood and the loss of a unique habitat.	Individual Public Comment	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Harbour Physical Environment, Water Quality and Sediment Quality	When asked about the chemical composition of the effluent at discharge point, no information was available.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Harbour Physical Environment, Water Quality and Sediment Quality	Where NP plans to put their pipe and run their effluent into the Strait it is in an area where the tides meet at the Bell Buoy. The effluent will be taken in all different direction with the the rising and falling tides.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Harbour Physical Environment, Water Quality and Sediment Quality	The EA does not identify amounts, concentrations and make-up of pollutants (such as heavy metals, dioxins, furans) being released from the proposed treatment facility. As a result, the risk to the environment and human health are not adequately assessed.	Sierra Club Canada Foundation	Refer to section 4.2 for comments concerning the receiving water study.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Human Health Evaluation	Additional flaws identified by Dr. Sweeney include the following: (1) a failure to provide supporting evidence relating to pulp and paper mill projects NPNS claims to be similar to its proposed ETF;132 (2) a heavy reliance on a single study (the Toxikos report) pertaining to a project that was never built;133 (3) a failure to examine potential fetal exposure to carcinogenic and endocrine disrupting chemicals;134(4) a failure to evaluate the health risks associated with potential spills on land or in watersheds;135 and (5) a failure to evaluate the potential health impacts of low dose cumulative exposures to toxic substances associated with the proposed ETF.	EcoJustice and Friends of the Northumberland Strait	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	Additional information gaps identified by Dr. Rainham include the risks of exposure to emissions through methods such as the consumption of fish exposed to toxic substances,140 and the chemical composition of the fine particulate pollution associated with the ETF project	EcoJustice and Friends of the Northumberland Strait	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	Arthur MacKay, in his report discussed above, notes the longer term impacts that should be expected due to exposure to effluent on an ongoing basis. This would include biological magnification of toxins in the Harbour and Strait, and impacts on a broad range of marine organisms, including plankton, fish larvae, fish, birds, marine mammals and humans. He also notes creation of anoxic "dead zones," declines in marine invertebrates, fish, and some birds and mammals, and fishery closures due to the presence of toxic chemicals in fish caught for human consumption. All these effects, and many others, were observed and documented in his St. Croix study	EcoJustice and Friends of the Northumberland Strait	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	Missing Studies - Report and analysis on the Canso chemical site and mercury contamination and how it may be impacted by the construction and operation proposed ETF, and/or how it may impact effluent composition and risks of mercury contamination to the environment and human health	EcoJustice and Friends of the Northumberland Strait	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways). Monitoring will be conducted as part of construction. Contingency plans will be in place to address contaminant if identified.
Human Health Evaluation	Pulp mill effluent can contain many other components beyond those listed by NPNS as "expected water quality characteristics". Many of these are described in the context of human health impacts, but there is no discussion as to how they will fare in the receiving environment, whether that be the diffuser into the Caribou Channel, or via a leak or spill.	EcoJustice and Friends of the Northumberland Strait	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	The ETF proposal includes the burning of sludge generated from effluent treatment... the chemical composition of the sludge is largely unknown, and no studies have been provided analyzing the sludge composition and the impacts to air quality and human and environmental health from emissions arising from burning sludge.	EcoJustice and Friends of the Northumberland Strait	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	The impacts of mercury and cadmium are not assessed in any meaningful way in the EA submission, yet they are clearly present in the effluent from the Mill and in the sediments in Boat Harbour Basin The long-term effects of discharging such substances into the marine environment are not addressed in the NPNS submission, despite the potential impacts on the marine ecosystem and marine species and human health, as well on air quality via burning sludge. The impacts of these substances, being bio-accumulative, must be analyzed.	EcoJustice and Friends of the Northumberland Strait	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	There could also be significant human health impacts from air emissions, from contamination of freshwater, drinking water and soils, and from contamination and bioaccumulation of toxic substances in marine species and marine foods.	EcoJustice and Friends of the Northumberland Strait	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Human Health Evaluation	Although the provincial Class 1 Environmental Assessment does not specifically require the proponent to conduct a human health risk assessment (HHRA) study, such a study should be ordered by the minister under Environment Act Section 34(1)c or b.	Ecology Action Centre	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	A more robust assessment of baseline conditions (such as water quality, sediment quality, land use patterns, fish consumption rates and other relevant environmental attributes) must be completed prior to project approval, to understand potential risks to human health related to the project.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	A robust and comprehensive assessment of potential health risks (i.e., through the completion of a Human Health Risk Assessment) is required in order to determine if adverse health effects from the project are likely.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	An adaptive management plan should be provided to address discrepancies between project assumptions and predictions, and what is found to occur in the environment once the project begins. This plan should include an assessment of changes to predicted risks to human health, should the project assumptions not hold true.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	Discussion is required around the interactions between potential impacts from the new ETF discharges from the outfall, and ferry discharges within the harbour and Strait, and in turn the implications for ecological and human health risks, from a cumulative effects assessment standpoint.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	The assessment of potential risks to human health associated with the project requires a fulsome understanding of both the exposure concentrations of Contaminants of Potential Concern (COPC) in the marine environment, and the exposure pathways identified as being of concern to human health (i.e., the consumption of fish and shellfish).	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	The potential risks to human health associated with cumulative impacts of the project and current stressors must be considered in the assessment.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	Add to all this is the fact that Northern Pulp does not know just exactly what the effluent is comprised of. Yet they want to pump millions upon millions of this toxic sludge into our waters with no concerns for our health, the environment, tourism, wildlife, fish habitat and absolutely no appreciation for nature, just to name a few.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways). Section 2 of the focus characterizes the current untreated and untreated effluent, and presents the results of Bench Test results for the new treated effluent.
Human Health Evaluation	Air emissions of certain contaminants to the atmosphere, during construction and operation (and maintenance) of the project, may present a potential inhalation exposure pathway for human receptors in communities located within the study area.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	Also, the new pipeline necessitates the burning of solid waste through their already inefficient burner systems creating further air pollution. The current air pollution according to a Dalhousie study is already a significant health hazard to the general population in the area.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Human Health Evaluation	Another grave concern is the fact that as this EA is a class 1 proposal, limited information is provided about the plan to collect and burn the sludge that will accumulate in the proposed ETF. No Human Health Risk Assessment has been carried out to ascertain additional dangers to human health should the sludge be burned in the stacks belonging to NP. These are stacks which have repeatedly failed emissions testing regulations in previous years. As it seems, according to the EA, the actual content of this sludge is not entirely certain. How can we risk burning it and emitting it into the air breathed by tens of thousands?	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	Are we as a province educated enough to make the final decision that the fish, lobster, any marine habitat for that matter that is fished and with having this food put on our tables 100% confident that this end product will have no significant impact on our health. Are we prepared for future lawsuits? I for one, who each year few times purchase lobsters in Pictou with other family members...will no longer be doing so. I am a two time breast cancer survivor who was advised by Oncologists that with no cancer in my family and at the time notably being subjected to chemicals - this was a primary reason of the cancer. This is also chemicals you are willing to put in our ocean.	Individual Public Comment	Refer to section 9.1 for comments concerning baseline studies for fish and shellfish tissue of key marine species in the vicinity of the pipeline diffuser location (HHRA).
Human Health Evaluation	As I worked and learned about the determinants of health I came to realize the risks posed by environmental pollution. Safe water, clean air and healthy workplaces are vital for healthy communities. It became obvious then that the health of the populations of Pictou, Pictou Landing First Nation and much of Pictou County were being sacrificed for some jobs at a massively polluting pulp mill.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	As the current proposed pipeline route traverses a drinking water supply area, there is a potential that accidental releases from the effluent pipeline in this area (should they occur) could potentially impact potable water supplies.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	At this time, it is only possible to identify candidate COPCs [contaminants of potential concern] that may be evaluated should a HHRA [Human Health Risk Assessment] of the project be a regulatory requirement. This is due to the fact that chemical process engineering design work is continuing and there is presently uncertainty regarding the likely chemical composition and characterization of the marine treated effluent discharge (including the potential concentrations of substances present in the effluent." As I am to understand this, there is no current certainty about what the effluent will actually contain.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	But then there is the pulp mill, which continues to create the air and water pollution caused by its processes, and its impact on human health, on adults and children alike, of which our well- respected doctors have ongoing professional experience.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	Chemicals present in treated effluent that is released to the marine receiving environment may come into contact with human receptors in marine sea water or sediments	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Human Health Evaluation	Concern: Lack of evidence provided by proponent on risk Northern Pulp's submission does not prove a lack of significant risk, and is missing critical data on many issues. One example of this is mercury, which is recognized by Health Canada to have significant risks to human health. Northern Pulp hardly mentions their site on Abercrombie Point is contaminated with mercury and disrupting this contamination on a site surrounded by water requires extreme caution and a full examination	Individual Public Comment	Monitoring will be conducted as part of construction. Contingency plans will be in place to address contaminant if identified.
Human Health Evaluation	Downplaying the independent air quality study perform by Hoffman et al from Dal	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	Due to uncertainty regarding effluent composition and approximate concentrations of substances present in the future treated effluent (which will not be verified until the project is operational), the identified candidate COPCs in effluent are considered preliminary at this time. Refinement of the candidate COPCs would be anticipated for a potential HHRA study of the project, should one be required (wherein various screening approaches, as previously described above, would be applied to refine and reduce the candidate list of COPCs down to a more reasonable and representative set of COPCs). The same types of screening considerations apply to the potential assessment of impacted drinking water, in the event the effluent pipeline experiences accidental releases in the sections that traverse drinking water supply areas. Candidate COPCs in future treated effluent were determined primarily on the basis of: <ul style="list-style-type: none"> <li>• A review and synthesis of historical data and reports for areas near the NPNS project, particularly areas that are or were influenced by the NPNS mill current or historical effluent discharges.</li> <li>• The outcomes of the COPC identification processes that were applied in the Toxikos (2006) HHRA study.</li> <li>• Selected additional relevant scientific literature.</li> </ul>	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	I am afraid of losing the opportunity to show my future children what our beautiful province has to offer. I am afraid of the increasing and alarming risks to human life in the surrounding area of Pictou County and beyond.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	I am writing out of concern of the health consequences to Nova Scotians. The composition of the toxic effluent will contain dioxins, furans, metals, solids and other contaminants at a rate of 90,000,000 Litres per day. Dioxins and furans can cause very serious health issues to humans and our food sources. Shellfish absorb dioxins and furans at 25,000-50,000 times the concentration in the water.	Individual Public Comment	Refer to section 9.1 for comments concerning baseline studies for fish and shellfish tissue of key marine species in the vicinity of the pipeline diffuser location (HHRA).
Human Health Evaluation	I am writing to express my concerns over regarding the weak Human Health Evaluation relating to the NP Waste Proposal. Presently, there is no regulatory requirement to conduct a human health risk assessment (HHRA) study in association with the NPNS project. The project is currently in a Class 1 EA Process in Nova Scotia that does not specifically require the completion of a HHRA in advance of registration of an EA.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	I have serious concerns about air quality, water pollution, dioxins and furans, and their impact on surrounding communities health - not to mention the other species that call the Northumberland Strait home.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Human Health Evaluation	I live approximately 3 km from the stacks at Northern Pulp. We suffer with our breathing here. Especially on humid days. The smog sits on top of our Town and penetrates into our homes and our lungs. We cannot open our windows. I had to cut 22 trees out of my yard so that the heavy smog would have a chance to flow through as opposed to sit stagnant. I know that none of you reading this right now know exactly what that means. Maybe in the next 20 days you should take a drive down to Pictou or Pictou Landing and take a nice long inhale. You should come in the middle of the night to see 23 stacks blowing smoke while people are sleeping and then only 11 in the day. This is a regular occurrence as I work night shifts and have the pleasure of witnessing this questionable activity.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	I would like this project's assessments to not discredit the human exposure factor at this location simply due to assumed remoteness. I insist that a more complete assessment be required in order to address the human health risks as a result of direct and prolonged exposure to effluent laden seawater.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	In the absence of epidemiological studies, it is not possible to dismiss the effects of the mill on human health. Nor is it possible to confirm the effects without delving into epidemiological studies. Unfortunately, this EA is currently proceeding without requirement to review the project's potential future effects on human health. This follows the paucity of attention to health effects from mill emissions and effluent over the last 51 years. This is an unjust burden upon the people of Pictou County. In any case, the information in Section 9 has no application in this EA in the absence of any historical epidemiological data. Any future epidemiological study would obviously take many months or years.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	It further admits in 9.2.4 that there are two sources of chemicals of potential concern that may result in potential chronic human exposure to project related chemicals. The potential impacts on the health of area residents must be known and properly evaluated before approval of this project.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	My concern with this paragraph is that any chemical flushed through a pipe to discharge 70-90 million litres of effluent from a bleached Kraft mill is unacceptable for this day and age. Mill wastewater continues to wreak havoc on surrounding ecosystems. Common sense can tell someone if chemicals are flushed into a water area then the first to digest the chemicals are zooplankton, plankton and krill which are the main food source for larger marine life. Then the lobster, herring, crab and tuna will ingest these contaminants and then eventually humans eat the polluted food supply. The fish get contaminated and so do the people who eat it, which can cause exorbitant health problems in the future for humans. So basically we should not eat the food in the ground or fish the marine life and be watchful of our drinking as there is a potential for human exposure. So how do we live what is left?	Individual Public Comment	Refer to section 9.1 for comments concerning baseline studies for fish and shellfish tissue of key marine species in the vicinity of the pipeline diffuser location (HHRA).

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Human Health Evaluation	My concern with this section is the unsafe effect that can happen to the water supply, fish and marine life and human safety if there is an accidental release of dangerous material. We are talking lives and the rich ecosystem that is being put at stake all for this company and their wealth, Northern Pulp had a recent leak in October 2018 although the Company did not think it was a huge deal because to them it was just a small one. It does not matter the size of the leak, it is the fact that it went unnoticed by the Company as it was reported by a couple out walking. There was another one at this plant 5 years ago. (CBC News (2014) "Northern Pulp mill shut down due to effluent leak" CBC, 10 June). Then in 2008, the underwater pipe broke and caused a lengthy shutdown of the mill. The Provincial taxpayers either loaned or gave the \$15 million to make sure this would not happen again and then for it to happen so soon again is a huge concern. I question the NP inspections and how many leaks are happening that the community is not aware of? And if a pipe is underground it will never be noticed!	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	NPNS states an HHRA is not needed unless specified as a condition once approval has been signed. Statistics are quoted from an HHRA prepared for a pulp mill proposal located in Tasmania on the other side of the equator? It bears noting, that mill never received approval to operate due to environmental concerns. There are bound to be significant differences between health challenges faced in that Eastern Hemisphere country than we experience here in the Northern Hemisphere. For instance, Tasmania claims to have the cleanest air in the world. Not exactly something Pictou and surrounding counties can boast with ongoing problematic putrid emissions from this aged pulp mill.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	Only using these contaminants for their assessment. • Carbon monoxide (CO). • Hydrogen sulphide (H2S). • Nitrogen dioxide (NO2). • Sulphur dioxide (SO2). • Total suspended particulate matter (TSP). • Fine particulate matter (PM2.5).	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	Potential risks to human health. In section 9.0, page 489 of the proposal: Human Health Evaluation, Northern Pulp reports that "At this time, effluent chemistry characteristics (including the specific substances present in treated effluent and their anticipated concentrations) will not be known with certainty until the project is operational." It concerns me that this project could be approved without fulling understanding the potential health impact. If further investigation is not done on potential human health risks waiting until the project is operational may be too late.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	Some of the chemicals present in treated effluent may accumulate within certain marine food items that are harvested by local community members. Tasmania Pulp mill used for comparison for the Human Health Evaluation. The Tasmania pulp mill was assumed to process mainly hardwood eucalyptus chips. There is some uncertainty regarding how the wood chips processed at the NPNS mill, which are from softwood coniferous species, would compare to eucalyptus chip processing, with respect to potential effluent chemistry differences.	Individual Public Comment	Refer to section 9.1 for comments concerning baseline studies for fish and shellfish tissue of key marine species in the vicinity of the pipeline diffuser location (HHRA).
Human Health Evaluation	The conclusions from the Toxidos (2006) study and the Dr. Andrew W. Wadsley's audit are so contradictory that a thorough Human Health Risk Assessment is called for prior to releasing NPNS' effluent into the Northumberland Strait as its impact on sensitive aquatic organism, marine mammals, birds, fish and humans may be significant.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Human Health Evaluation		Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Human Health Evaluation	The current proposal is full of models, assumptions, and simulations yet in the final analysis we cannot tell what will happen to the Northumberland Strait marine environment and its fisheries and our health should the toxic effluent pipe be approved and constructed.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	The HHE does not include quantitative exposure and risk analysis approaches at this time that would typically comprise the HHRA steps of exposure assessment, toxicity assessment and risk characterization. The HHE is not a HHRA, though it does necessarily comprise some elements of a HHRA, as noted above.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	The lack of current, peer-reviewed studies on the effects on human health from both this proposed pipe and the burning of sludge and its contribution to toxic air emissions	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	The long term impact of millions of litres of effluent a day going into the body of water, needs to be studied and reviewed for impact on water quality, ocean biology impacts, breeding and health of the fish and shellfish, human health including swimming and consumption of fish.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	The makeup of the waste has not been clearly identified and mention of mercury has been suppressed if not avoided. This is only one toxic substance that must be thoroughly investigated as to the effect on the health of the Strait as well as the local community and those consuming the sea food from this area. Long term effects are not mentioned.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	The Northern Pulp treatment system proposal includes a plan to burn the waste sludge. The waste sludge contains toxins which would be released through the stacks of the mill's power boiler. The proposal is to "dewater the sludge prior to mixing it with bark and other wood waste for combustion in the mill's power boiler." Airborne emissions of the mill are a significant health concern to me and I can find no evidence that Northern Pulp's proposal mitigates those pollutants.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	They are stating that it is a potential Human Health Risk. I am extremely concerned about the health of people living close to Northern Pulp. For decades air emissions from the mill have been a problem affecting resident's health and the main issue has been the cancer numbers in Pictou County and now they want to pump it into our water. Pulp and Paper mills pollute our water, air and soil. There are about 500 Kraft mills, and many thousands of other types of pulp and paper mills, in the world. Primary concerns include the use of chlorine-based bleaches and resultant toxic emissions to air, water, and soil	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	This statement within the NP EA is a huge red flag! How can anyone have trust and confidence that this effluent is safe for human health, marine species and the overall environment when the contents are still unknown and will remain unknown until its being pumped into the ocean. At that point, it is too late at 90,000,000 Litres per day!	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Human Health Evaluation	The EA does not identify amounts, concentrations and make-up of pollutants (such as heavy metals, dioxins, furans) being released from the proposed treatment facility. As a result, the risk to the environment and human health are not adequately assessed.	Sierra Club Canada Foundation	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Indigenous Peoples Use of Land and Resources	NPNS must provide discussion and analysis of potential impacts of pipeline operations and maintenance (specifically integrity digs) on land and resource use for both Indigenous and non-Indigenous citizens.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 11.1 for comments relating to MEKS. Refer to section 10.2 for comments concerning an Archaeological Resource Impact Assessment for the terrestrial environment. (shovel testing).
Indigenous Peoples Use of Land and Resources	NPNS must provide discussion and analysis of tourism impacts and human health risks related to Indigenous land and resources, and non-Indigenous lands and resources (i.e., drinking water and marine based recreation).	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways). Section 2 of the focus characterizes the current untreated and untreated effluent, and presents the results of Bench Test results for the new treated effluent. Furthermore, refer to section 11.1 for comments relating to MEKS
Indigenous Peoples Use of Land and Resources	The Aboriginal rights of PLFN need to be considered. The new discharge location still has a direct affect on them and their livelihood, as it pertains to fishing.	Individual Public Comment	NPNS recognizes First Peoples rights; an MEKS has been conducted and shared with groups such as PLFN and KMKNO. Formal consultation with PLFN has been underway since April 2017. NPNS intends to have two-way communication channels open with PLFN.
Indigenous Peoples Use of Land and Resources	The report indicates that the assessments listed below are not yet completed: • Avian / turtle follow-up field studies, • MEKS field surveys, • Vegetation, wetland and watercourse follow-up field studies, • Marine seismic, geotechnical and habitat surveys The potential environmental impacts of the proposed project cannot be fully assessed with this work not yet completed, in particular the marine habitat surveys. NSE should require these assessments be completed prior to granting approval.	Individual Public Comment	Refer to section 11.1 for comments relating to MEKS
Indigenous Peoples Use of Land and Resources	Member after member of the PLFN, from school children to elected leaders, spoke passionately about the many losses they have suffered since the pulp mill effluent was first piped into the nearby estuary of Boat Harbour in 1967. These losses include a valuable fishery, medicinal plants, recreational use of the water and use of surrounding land for traditional cultural practices.	Shore Nova Scotia Chapter, Council of Canadians	Refer to section 11.1 for comments relating to MEKS
Indigenous Peoples Use of Land and Resources	Northern Pulp has failed to meet the requirement of consent from the local Indigenous population.	Shore Nova Scotia Chapter, Council of Canadians	Refer to section 11.1 for comments relating to MEKS
Marine Archaeological Resources	For over 50% (9/17) of the VECs examined in this section, NPNS failed to conduct its own primary research to determine baseline conditions. The following list identifies the VECs for which NPNS did not complete primary studies: a) Freshwater Fish and Fish Habitat; b) Wetlands; c) Flora/Floral Priority Species d) Terrestrial Wildlife/Priority Species; e) Migratory Birds and Priority Bird Species/Habitat f) Harbour Physical Environment, Water Quality and Sediment Quality; g) Marine Fish and Fish Habitat; h) Marine Mammals, Sea Turtles and Marine Birds; and i) Marine Archaeological Resources	EcoJustice and Friends of the Northumberland Strait	Refer to section 10.1 for comments concerning an Archaeological Resource Impact Assessment for the marine environment.
Marine Archaeological Resources	Missing Studies Engineering reports or drawings regarding the construction of the shoreline and marine portions of the pipeline, the route it will follow and how deeply it can be buried;	EcoJustice and Friends of the Northumberland Strait	Refer to section 10.1 for comments concerning an Archaeological Resource Impact Assessment for the marine environment. Refer to section 2.1 for comments concerning effluent pipeline location, routing and intersecting properties.
Marine Archaeological Resources	The EA submission, although lengthy, lacks critical information, or sufficient detail, in crucial areas such as: (j) Drawings or mapping/chart coordinates showing the precise pipeline route on the shore, in Caribou Harbour, and in Caribou Channel;	EcoJustice and Friends of the Northumberland Strait	Refer to section 2.1 for comments concerning effluent pipeline location, routing and intersecting properties.
Marine Fish and Fish Habitat	The report contains insufficient evidence to assess exactly how broad any damage might be and gives no clear indication on what might be done to mitigate this damage should it occur.	Clean Ocean Action Committee	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	...The sea bottom in the area of the proposed pipe is very fragile. It's mostly sand and in the inner harbour, mud and eelgrass. The eel grass is very fine and important to juveniles and larvae of lobster and crab.	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Arthur MacKay, in his report discussed above, notes the longer term impacts that should be expected due to exposure to effluent on an ongoing basis. This would include biological magnification of toxins in the Harbour and Strait, and impacts on a broad range of marine organisms, including plankton, fish larvae, fish, birds, marine mammals and humans. He also notes creation of anoxic "dead zones," declines in marine invertebrates, fish, and some birds and mammals, and fishery closures due to the presence of toxic chemicals in fish caught for human consumption. All these effects, and many others, were observed and documented in his St. Croix study	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.4 for comments concerning the Environmental Effects Monitoring (EEM) Program.
Marine Fish and Fish Habitat	As discussed below, no testing or test results have been provided to show the effluent's composition. Most of the substances contained in raw effluent are not discussed, and their impacts on the marine, freshwater, terrestrial and atmospheric environments are not analysed. Likewise, as will be discussed further below, the Stantec modelling used to predict the effluent mixing and transport in the marine environment has fundamental flaws, and must be disregarded. Contrary to the directions in the June 14, 2017 letter, the mixing zone proposed by NPNS in this EA does not consider meaningfully, or in some cases even note the existence of, biotic communities and spawning areas, and the information provided about spawning areas is not accurate. <sup>98</sup> As well, given the presence of mercury and other bioaccumulative metals and compounds, the proposal does not comply with the requirement that no such substances be discharged within a mixing zone. Further, as CH-B is positioned within one of the last remaining herring spawning areas in the Strait, and within an important lobster fishing area, <sup>99</sup> it violates the express requirement that "mixing zones should not impinge upon...important fish spawning and/or fishing areas". <sup>100</sup> The Caribou Channel is in the middle of an extremely active fishery, yet this is not mentioned by the consultants who purport to apply the "CCME guidelines" that require such factors to be considered.	EcoJustice and Friends of the Northumberland Strait	Refer to section 2.3 for comments concerning the physical and chemical characterization of NPNS' PRESENT raw wastewater and the proposed technology for treatment.
Marine Fish and Fish Habitat	FONS members were appalled by the prospect of up to 85,000,000 litres of hot treated effluent containing harmful chemicals, being pumped directly and continuously into the Strait every day. They are very concerned about the potential for serious and irreversible damage to Pictou County's air, soil, freshwater, wetlands and wildlife, and to the Strait ecosystem and the local economy it supports, including fisheries and tourism.	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	For over 50% (9/17) of the VECs examined in this section, NPNS failed to conduct its own primary research to determine baseline conditions. The following list identifies the VECs for which NPNS did not complete primary studies: a) Freshwater Fish and Fish Habitat; b) Wetlands; c) Flora/Floral Priority Species d) Terrestrial Wildlife/Priority Species; e) Migratory Birds and Priority Bird Species/Habitat f) Harbour Physical Environment, Water Quality and Sediment Quality; g) Marine Fish and Fish Habitat; h) Marine Mammals, Sea Turtles and Marine Birds; and i) Marine Archaeological Resources	EcoJustice and Friends of the Northumberland Strait	The Project will meet environmental regulations and requirements, and the Proponent will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment.
Marine Fish and Fish Habitat		EcoJustice and Friends of the Northumberland Strait	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	He(Arthur MacKay) notes that the NP submission discusses mainly commercial fish species. While such species are important, it is not the full picture. He writes: ...the foundational species of the ecosystem such as planktonic species, invertebrate and fish larvae, subtidal and intertidal invertebrates and plants, forage species, etc are not considered. Seasonality is an important issue and to truly understand ecosystem dynamics, at least 12 monthly surveys must be undertaken that include records for plankton, fish and invertebrate larvae, forage species, fish, bird, and mammals.	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	It could have significant effects on the marine ecosystem and foundational species of the ecosystem, such as planktonic species, invertebrate and fish larvae, subtidal and intertidal invertebrates and plants, forage species and other marine organisms.	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Missing Studies Studies regarding impacts of effluent from kraft pulp mills (without delignification) on species present in the Strait, including lobster, crab, herring and foundational ecosystem species:	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	On February 1, 2019, Environment and Climate Change Canada officials appeared before the Standing Committee on Agriculture and Fisheries of the Prince Edward Island Legislature. In that appearance, an ECCC official stated, in part: Despite this high level of compliance with the existing effluent standard, the environmental effect studies have shown that the effluents from 70% of the pulp and paper mills across the country are having an effect on fish and/or, depending, fish habitat. <sup>87</sup> The official also confirmed that the NPNS mill was included in the 70% of mills whose effluents are having an "impact on fish habitat".	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	the Atlantic Canada Conservation Data Centre (AC CDC) report relied on by NPNS in support of its evaluation of the potential impacts on various species (including birds, terrestrial wildlife, marine mammals, fish, sea turtles, and others) purports to identify the species "known to occur" in the vicinity of the ETF project. <sup>70</sup> However, the majority of the data relied upon by AC CDC is over a decade old – and in some cases dates back over 50 years. <sup>71</sup> It is trite to state that the species residing in any particular area change over time. In the absence of current research, NPNS cannot purport to identify the species that may be affected by its project, much less evaluate the potential impacts on those species.	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	The impacts of mercury and cadmium are not assessed in any meaningful way in the EA submission, yet they are clearly present in the effluent from the Mill and in the sediments in Boat Harbour Basin The long-term effects of discharging such substances into the marine environment are not addressed in the NPNS submission, despite the potential impacts on the marine ecosystem and marine species and human health, as well on air quality via burning sludge. The impacts of these substances, being bio-accumulative, must be analyzed.	EcoJustice and Friends of the Northumberland Strait	Refer to section 4.2 for comments concerning the receiving water study.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	The main route of exposure for wildlife in aquatic ecosystems is the consumption of contaminated aquatic prey species such as fish. To address this route of exposure there is a methylmercury CCME tissue residue guideline for protection of wildlife consumers of aquatic biota. <sup>64</sup> As the effluent will contain mercury, an assessment against the guideline should be conducted. Existing mercury levels in aquatic biota near the outfall should be measured, and the bio-accumulation that may occur from the exposure to the mercury in the effluent should be compared to the guideline. There is no indication that this guideline was reviewed and taken into account within the NPNS studies.	EcoJustice and Friends of the Northumberland Strait	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Marine Fish and Fish Habitat	The proposed outfall CH-B is located in the middle of the last major active spawning area for Area 16F herring. Herring spawning grounds have compressed in the past few years as the stock has declined. Very little herring spawning occurs anywhere else in the Eastern Gulf.	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	A key reasoning behind the proposed modifications to current PPER has been the ongoing degradation of fish habitat by most mills, even when in regulatory compliance. The PPER are primarily designed to prevent effluents that cause acute lethality to fish from entering nearby waterways (pg. 357) and do not deal with long term cumulative effects or ecosystem impacts. Furthermore, according to Caroline Blais, the Director of the Forest Product and Fisheries Act Division at Environment and Climate Change Canada (ECCC), 70% of pulp and paper mills abiding by today's PPER have still shown deleterious impact on fish or fish habitat. A 2016 EcoMetrix study also found enlarged gonads and livers in fish tested near the current Boat Harbour effluent treatment facility's outfall location, despite the fact that Northern Pulp has routinely passed the acute lethality testing.	Ecology Action Centre	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	NPNS's registration document is very poor and fails to provide necessary information about key elements of their plan, including and importantly - the content of the substances they wish to pump in large volumes into the Northumberland Strait and the potential impacts that it undoubtedly will have on marine life and air quality.	Ecology Action Centre	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Marine Fish and Fish Habitat	Research from other pulp and paper mills can provide insight on the potential risks to the marine environment associated with some of the products referenced in NPNS's project proposal. In British Columbia's Howe Sound, the Port Mellon and Woodfibre bleach kraft pulp mills contaminated the local waters so badly that several fisheries had to be shut down in the 1980s. This was due in large part to the dioxins and furans released as a byproduct of the chlorine bleaching process.	Ecology Action Centre	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	The proponents claim that the majority of the disruption to ocean habitat is likely to take place during the project's construction phase, when the seafloor is to be dredged and laid with a rocky substrate to lay the pipeline and keep it place over the long-term. As for the operations phase, during which the pipe will dump its tens of million litres of treated effluent into the Strait, the report suggest that all concerns related to the quality of the water will dissipate within five metres of the discharge location. The report claims that "given the likely lack of spatial overlap at this location, significant cumulative residual environmental effects to water quality or sediment quality as a result of treated effluent discharge are not likely." But several studies, as well as ECCC expert testimony before the Prince Edward Island Standing Committee on Agriculture and Fisheries referenced above, tell us that pulp and paper effluent is known to be harmful to fish and fish habitat in the majority of tested circumstances. In essence, the substance that Northern Pulp would inject into the Northumberland Strait would, undoubtedly, pose a threat to aquatic life - and the assessment document says as much - but suggests that, because of dilutive power of the ocean, no great harm should occur in this instance.	Ecology Action Centre	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Today, NPNS refuses to release the full suite of information on the components of the effluent they would see released into Northumberland Strait under their new proposal, and claims that the risk of contamination to marine habitat is "Not Significant". This is simply not credible. This comment is referring to dioxin and furans found in the proximity of the spill site during the pipeline break in 2014.	Ecology Action Centre	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Marine Fish and Fish Habitat	a biological monitoring program should be implemented prior to final commissioning of the proposed treatment plant and effluent outfall. The collection of this baseline information will significantly strengthen the interpretive power of the biological monitoring program as a whole. This baseline information will allow the biological monitoring program data to be analysed in a BACI (Before-After-Control-Impact) framework so that potential effluent related effects can be considered both spatially (i.e., exposure vs. reference) and temporally (i.e., predischage vs post-discharge).	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.4 for comments concerning the Environmental Effects Monitoring (EEM) Program.
Marine Fish and Fish Habitat	A complete list of species fished should have been composed with research on their tolerance ranges, sensitivities and how different contaminants in the effluent could negatively affect that species. Each species has a different mechanism for expelling toxins from their body so comparing one species to another does not work in the majority of cases.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	As stated in Appendix R of Northern Pulp's EA Registration documents, it is recommended that more research be completed on the effect of the effluent on lobster in each life stage. It is important to highlight that the recommendation given in Appendix R regarding more research on the effect of effluent on lobster must be followed through and completed.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Atlantic sturgeon must be considered in the assessment, and potential impacts to the species identified.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Detailed field assessment on the sea scallops that inhabit the area near the proposed outfall location must be completed prior to the release of the proposed effluent to ensure there will be no negative effects on the sea scallops.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	Ideally there would be no change or alteration to the scallop buffer zone. It is in place to protect juvenile lobster habitat and that protection zone should be honored. Inaccurate Figure 13 in section 8.12.2.7	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	In addition, analysis and monitoring of lethal and sublethal effects should be carried out independently of one another on locally important species such as lobster, crab, herring and Atlantic salmon.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.4 for comments concerning the Environmental Effects Monitoring (EEM) Program.
Marine Fish and Fish Habitat	In our professional opinion, a comprehensive multi-year baseline study on all marine species present within the Northumberland Strait must be completed in order to understand potential adverse impacts that may result from project activities. Robust studies are required to better understand each species, and the potential impacts the project could have on each.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.
Marine Fish and Fish Habitat	Individual species cannot be pinpointed to specific locations within the Northumberland Strait. They do have traditional habitat and areas they are commonly found, but individuals are not restricted to these areas only. The ability, and likelihood, of each species to move throughout the Northumberland Strait must be considered and accounted for in a robust environmental assessment.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	it is imperative that NPNS implement a robust continual biological monitoring program prior to effluent discharge and that continues through operations.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.4 for comments concerning the Environmental Effects Monitoring (EEM) Program.
Marine Fish and Fish Habitat	it is recommended that the Proponent should approach the EA with an analysis that goes beyond the provision of Serious Harm to a shift in focus on avoiding harmful alteration, disruption or destruction (HADD) of fish and fish habitat. This approach is being contemplated in the proposed Fisheries Act amendments under Bill C-68. Given the high level of concern from fisheries groups regarding harmful alteration, disruption or destruction of fish and fish habitat of the Northumberland Strait, and the potential adverse effects of the Project, Northern Pulp must assess the proposed activities and design of the Project in the context of HADD avoidance.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	More research required. With respect to: Atlantic Sturgeon	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	NPNS fails to indicate how it will mitigate negative impacts of the effluent on marine life that may occur before effluent testing is conducted. Given that NPNS has failed to disclose what the effluent leaving the new ETF will contain, forgoing monitoring of the effluent for up to 24 months poses an unacceptable risk to marine life in the Strait. If effluent contains chemicals of concern that bioaccumulate in marine life, NPNS's proposed testing of the effluent may be too late to stop or mitigate the potential harm these chemicals present.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.4 for comments concerning the Environmental Effects Monitoring (EEM) Program.
Marine Fish and Fish Habitat	Proper research needs to be completed to understand possible effects of the effluent on herring spawn, including sub-lethal effects. A rebuilding plan for herring is currently being developed to ensure the regrowth of the stock, and therefore any potential impacts to herring spawn must be fully considered in the EA.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	Proper research needs to be completed to understand possible sublethal effects of the effluent on herring spawn. Currently, the fall spawning stock is in the critical zone and the spring spawning stock is in the cautious zone (DFO, 2018) and a rebuilding plan is being developed to ensure the regrowth of the stock. The need for more research is obvious to assist in the rebuilding plan.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Proper research needs to be completed to understand possible sublethal effects of the effluent on mackerel eggs. Currently, the stock is in the critical zone (DFO, 2017) and a rebuilding plan is being developed to ensure the regrowth of the stock. The need for more research is required to assist in the rebuilding plan and ensure all eco-system aspects are understood to give the stock biomass a chance to rebuild.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Research must to be completed to understand possible sub-lethal effects of the effluent on mackerel eggs. Currently, the stock is in the critical zone (DFO, 2017) and a rebuilding plan is being developed to ensure the regrowth of the stock. The EA must clearly assess how potential impacts from the project could affect stock regrowth.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Taken together, these studies suggest the potential for impact on crustacean health by several organic compounds (androgenic, estrogenic, antiestrogenic, antiandrogenic) which have suspected roles in impaired reproductive potential in finfish exposed to BKME. Metals such as cadmium that could be present in BKME are also recognised to impact growth and reproduction in crustaceans. Due to the limited and dated information available regarding the potential for adverse effects on the health of the marine species of commercial interest, in particular growth and reproduction of crustaceans such as the American lobster and rock crab, upon exposure effluent to be produced by the proposed replacement effluent treatment facility at NPNS, further studies (acute and sublethal) are recommended.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	The EA must consider both lethal and sublethal effects of the Project and must go beyond the provision of "serious harm" to incorporate how effects, other than direct mortality, could negatively impact the fisheries of the Strait.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.4 for comments concerning the Environmental Effects Monitoring (EEM) Program.
Marine Fish and Fish Habitat	The EA must outline species-specific limits of tolerance with respect to the above parameters described as well as upper and lower limits for chemicals specific to mill effluent. A robust assessment of how changes to the marine environment, and the discharge of effluent contaminants, impact species inhabiting the area must be completed in order to understand impacts of the proposed project.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	The EA must provide more details on mitigating benthic disturbance and subsequent TSS mobilization during pipe construction in the Northumberland Strait.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to Addendum 4.0 for comments relating to biological monitoring studies including benthic invertebrates, fish population and dioxin and furan levels in fish.
Marine Fish and Fish Habitat	The EA should consider every species fished commercially in the area and should look at sensitivities of all of those fish to changes in water quality and negative health effects of contaminants	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	the fishing organizations are extremely concerned with the lack of solid evidence in NPNS's proposal that this effluent will not alter the ecosystem in the Northumberland Strait. An alteration of the ecosystem could be due to a change in water chemistry, sedimentation, or negative health effects on marine life.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.4 for comments concerning the Environmental Effects Monitoring (EEM) Program.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	The information provided proves the susceptibility of sea scallops to temperature and that they inhabit the area near the proposed outfall location. This justifies the completion of detailed field work and trials in the area prior to the release of the proposed effluent to ensure there will be no negative effects on the sea scallops.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location.
Marine Fish and Fish Habitat	The Northumberland Strait must be also assessed as an interwoven and interdependent ecosystem, not only on an individual species by species basis.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	The proposed changes to the PPER must be considered when addressing the species specific effects including a quantitative evaluation of the impact of the proposed changes on the assumptions and conclusions of the EA.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	NPNS are in on-going discussions with Environment Canada to be aware of any proposed changes to the regulations and how they will affect the assumptions and conclusions of this assessment.
Marine Fish and Fish Habitat	The recommendation in this case is that Northern Pulp respect this process and request a federal assessment due to the fact that the federal government is currently seeking consultation on listing white hake as endangered under SARA.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	5. Do either down- or upstream coincide with fish spawning grounds or shellfish banks? While the levels of nutrients e.g P N added by the effluent are relatively small, the effluent has a relatively high chemical oxygen demand. The ratio of COD to BOD suggests that a fairly high proportion of the COD is non-biodegradable.	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3. Additional information on the effluent characteristics are also provided in Section 3.3 of the Focus Report.
Marine Fish and Fish Habitat	A cooling tower as proposed by NP for its new treatment facility should lower waste effluent temperature to 32-36 degrees C. This would represent a 20 to 28-degree C water shock to marine life, if this water entered a marine habitat. This thermal shock would kill any marine life within meters of the discharge point. This thermal loading should be contrary to the Fisheries Act. Yet this issue is not addressed in KSH's design proposal for a new facility. There is no plan to bring wastewater to within 1 to 5 degrees of the natural habitat. Further to this, Northern Pulp has been unable to release the exact composition of this proposed effluent.	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3. Additional information on the effluent characteristics are also provided in Section 3.3 of the Focus Report.
Marine Fish and Fish Habitat	A Lobster Study! To gather info to understand and help protect the Lobster Fishery from that effluent, which will carry an enormous organic load. A Lobster Study was promised to be undertaken. PEI Legislature Committee 16 Feb 2018. Their testimony revealed Lobster Studies were on their immediate radar and would be carried out. NP's agent, Dillon was looking after securing Scientists for expert advice. Those studies were never carried out or perhaps no experts could be secured who felt there was no danger?	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	A second concern I have about the report is that I do not see any data on the possible damaging effects that the effluent might have on lobsters.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Acidification, mostly caused by burning fossil fuels is corroding and preventing formation of shells. The increased acidity will lower the saturation state of the waters with respect to calcite and aragonite and likely affect the ecology of carbonate-secreting organisms such as coccolithophores, foraminifera, pteropods, mollusks, crustaceans, echinoderms, gastropods and corals.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	Add to all this is the fact that Northern Pulp does not know just exactly what the effluent is comprised of. Yet they want to pump millions upon millions of this toxic sludge into our waters with no concerns for our health, the environment, tourism, wildlife, fish habitat and absolutely no appreciation for nature, just to name a few.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways). Section 2 of the focus characterizes the current untreated and untreated effluent, and presents the results of Bench Test results for the new treated effluent. Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	After reading Appendix R of the EA I fail to see how this can even be called a study, if Stantec can run the study saying everything will meet background by 2 to 5 meters and Stantec is also in charge of running the lobster study which says because it meets background by 5 meters lobsters will not be affected. There needs to be independent third party studies done on both the plume and the effect on lobsters. Harvesters have history with Stantec (Confederation Bridge) and they have a history of not agreeing with their reports. The receiving water study is just a prediction, it is not factual therefore the results of Appendix R are not fact they are just a prediction based on a prediction, not very comforting to a \$2 billion a year industry.	Individual Public Comment	Additional information on the effluent characteristics and impact assessment to marine fish are provided in Sections 3.3 and 7.3 of the Focus Report. Northern Pulp will complete environmental effects monitoring programs (EEM) programs in accordance with the Pulp and Paper Effluent Regulations under the Fisheries Act. These EEM programs include quarterly sublethal toxicity testing for fish and invertebrates.
Marine Fish and Fish Habitat	All shellfish are extremely sensitive to toxins -- and also to temperature and to acidity in water as their shells are formed of calcium. I have thus far seen no proof that there won't be damage to the shellfish and other aquatic flora and fauna of the Strait. In fact, I have read the opinions of several marine biologists that such effluent could be extremely harmful to shellfish.	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location.
Marine Fish and Fish Habitat	Also a concern not addressed in Northern Pulp's EA is what will or what is the probability of a shellfish closure zone around the outfall. Will it be based on depth and volume of water affected? Will it be left up to DFO, not a Northern Pulp issue, but only to be a issue and concern to the fishermen? The area of the proposed outfall is one of the last remaining herring school breeding/ spawning ground for which I fish during the fall herring season 16F. As fishers we have drastically reduced our quota to continue to protect and look after the herring stocks for generations to come. As DFO knows the herring stocks are in very poor shape and as a precautionary measure, have cut quota in hope to rebound the stocks. What is this outfall going to do to these herring spawning grounds? This is just one more reason that more in-depth studies need to be done to these very critical species.	Individual Public Comment	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.
Marine Fish and Fish Habitat	Although there are many concerns my biggest concern is the effluent along with the thousands of litres of warmer water that will be pumped into the Northumberland Strait. This will kill lobster larvae and god knows what else; it's inevitable and would directly breach Section 36 of the Federal Fisheries Act. A federal assessment is inevitable. The fact is that the sea bottom, where Northern Pulp plans to dredge to bury the pipe in Caribou Harbour and the Northumberland Strait, is federal land, which I believe should necessitate a federal assessment. A full Federal assessment study should be done on the marine environment with the millions of litres of effluent that will be discharged into the Northumberland Strait once the pipe hopes to be in place. Our waters are under federal protection. Also enough evidence has shown that the likelihood that it will cause adverse effects or environmental with effects to our ecosystem. This is very concerning to us all.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	Appendix J1 Part 2 on testing for urchins in Boat Harbour makes me wonder. Boat Harbour is presently fresh water or effluent but not salt water. How can it be salt water at this time?	Individual Public Comment	For information on Boat Harbour, please visit <a href="https://novascotia.ca/boatharbour/about.asp">https://novascotia.ca/boatharbour/about.asp</a>
Marine Fish and Fish Habitat	Appendix-J1-1 page 2.18 under Crustacea refers to American Lobster . Caribou area lobster are Cold Water Lobster and are less heat tolerant than the American lobster . Numerous studies clearly refer to the difference.	Individual Public Comment	Thank you for this information, this will be considered when preparing the Environmental Effects Monitoring.
Marine Fish and Fish Habitat	As a fisherman in the northumberland Strait I am very concerned with a pipe in the strait our association has financed a hatchery for lobsters to get them past there most vulnerable people stage which has helped get our fishery to record landings.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	As well, Northern Pulp's plan is not to dump into a fresh-water River , they are wanting to dump into an ocean; so why wouldn't the test be in relation to species in the ocean like lobster larvae , herring eggs, plankton, etc.	Individual Public Comment	Additional information on the effluent characteristics and impact assessment to marine fish are provided in Sections 3.3 and 7.3 of the Focus Report. Northern Pulp will complete environmental effects monitoring programs (EEM) programs in accordance with the Pulp and Paper Effluent Regulations under the Fisheries Act. These EEM programs include quarterly sublethal toxicity testing for fish and invertebrates. When discharging into marine environments, these EEM programs are designed to test against marine organisms exposed to the effluent.
Marine Fish and Fish Habitat	Backflow of effluent to the harbour is possible because of the harbour's Easterly exposure, including Nor'easter's. High sustained winds with tides and surges flooding land of low elevation and saltwater marshes. The food chain that is impacted and can't be mitigated because of the scope of the Caribou Harbour ecosystem, impacts food security.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Marine Fish and Fish Habitat	Based on past behaviours exhibited by the owners of this mill as well as previous Provincial governments I am concerned this project will continue to expose the Northumberland Strait fishery to the risk of industrial chemical pollution. It will also expose the 11 Km's of the overland pipeline route to the ferry terminal to the same risk.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Contrary to what is showing in Figure 8.12-3 of the proposal, rock crab is fished all over the proposed affected area. The rock crab fishing area we call "Africa" because of its shape, runs from Caribou Island, Pictou Island to about Arisaig. The footprint of the pipe runs through a vital rock crab nursery where juvenile crab are spawned and grow to maturity.	Individual Public Comment	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.
Marine Fish and Fish Habitat	Dillion Contracting itself notes the need for more information on the effects of solids on Lobster Larvae.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Diluting salt water with millions of litres of fresh water in a sensitive fishing area is very concerning.	Individual Public Comment	Freshwater flows into the Northumberland Strait through Middle River, East River and West River. See the receiving water study in section 4.2 of the focus report for more information on why the quantity of freshwater entering the Northumberland strait will not increase.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	During consultations with Northern Pulp prior to the EA filing, we identified several areas with respect to wild Atlantic Salmon where their research was data-deficient. We offered to assist in gathering the information required. The most concerning deficiency was a lack of information with respect to how the proposed outfall impact zone will overlap with salmon migration routes and salmonid congregation points spatially and temporally at critical life stages. This data gap was not addressed, but is noted by the proponent in their EA filing (Section 8.6.2.4 page 217). Although the effluent coming out of the outlets will meet specifications of federal Pulp and Paper Effluent Regulations, those regulations mandate that the effluent be further diluted within a prescribed distance from the outlet. These dilutions are necessary to ensure the receiving water meets acceptable parameters for biological oxygen demand, chemical oxygen demand, temperature, salinity, etc. in order to ensure aquatic life will not be harmed and ecosystems not disrupted.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	During lobster season, the buyers tie large numbers of lobster in floats in Caribou Harbour until they are transported for processing. Floats are large containers which allow for water to flow in and out to keep the lobster alive. Will this water be contaminated by effluent thus making the fish toxic?	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Events that would be catastrophic to the marine ecosystems include: 1) Structural failure of the pipe causing effluent to be released prematurely of the discharge location. 2) Errors in the receiving water study including tides, water flow, mixing characteristics at discharge location, lack of consideration for climate change effects will have on mixing characteristics.	Individual Public Comment	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Marine Fish and Fish Habitat	Figure 8.12-6 is also not accurate. The map does not show the herring nursery which is in the area of the outfall. Also, there is herring fishing all around Pictou Island and not just as indicated. We also fish for herring in the area of the proposed outfall location. Herring is a fixed gear fishery. We use anchors on each end of our herring nets. The pipe and proposed no anchor zone will significantly interfere with our herring fishery.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Figure 8.12-8 is also not accurate. There are mackerel around Pictou Island and Caribou Island and in area of the outfall. There is mackerel in Caribou channel and Pictou channel, and around every wharf. There are many people who fish mackerel from all the wharves in the area, including Caribou. They also fish for bass, smelts, capelin and other fish from the wharves. This is an important healthy food source for many people in our area and part of our tradition and culture and must be protected.	Individual Public Comment	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.
Marine Fish and Fish Habitat	First, as a fisherman I am concerned, that the proposed effluent pipe will be a detriment to the local fisheries, including that of lobster, rock crab and herring. The proposed outfall location is premium breeding grounds for all of these fisheries, and are of grave importance to the local area, as well as the entire economy of Nova Scotia. I feel as though there should be a greater deal of importance placed on protecting these fisheries. The science provided in Northern Pulps proposal is outdated, being conducted in the 1960's.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	<p>FOR THE ENVIRONMENT. MEETING REGULATIONS DOES NOT PREVENT HARM NOVA SCOTIA and the Northumberland Strait has many great resources. However, they are at risk with the proposed Effluent treatment process. As it stands right now, there are no CCME guidelines established for Marine Environments for some of the different chemicals and compounds that make up the pulp mill effluent. Pulp and Paper Effluent Regulations PPER in Canada cover two matters total suspended solids TSS and biochemical oxygen demand BOD. Even though total discharges of TSS and BOD in pulp and paper effluent decreased by approximately 90 and 97 respectively from 1970-2008, pulp mill effluents continue to have harmful impacts on fish, fish habitat and the environment. Information gathered through environmental effects monitoring EEM at all Canadian mills points to the disturbing conclusion that although mills are meeting regulations and passing the PPER toxicity test, 70 are having harmful effects on aquatic life and habitat, and 55 are having harmful effects on the larger environment. This information led the federal department of Environment and Climate Change to undertake a modernization review of pulp and paper effluent regulations in 2017. Results from EEM studies and the changing realities of the pulp and paper industry indicate a need to modernize the PPER to improve environmental protection, the department states. If meeting regulations is not enough to prevent harm, neither is passing toxicity tests. Only one toxicity test is required under Canadian pulp and paper regulations. The required LC-50 test is for acute lethality. For this test, an effluent is considered acutely lethal if the treated effluent at 100 concentration kills more than 50 of the Rainbow Trout exposed to it during a 96-hour period. Long-term effects, including impacts on reproduction or growth, cumulative impacts on fish habitat and the larger environment or accumulation of substances harmful for human consumption are not regulated under the PPER. Testing for environmental effects is required for information purposes. Only two mills in Canada test for and report impacts of effluent on the usability of fish resources by humans. Effluent from pulp and paper mills is regulated at the federal level principally by the Pulp and Paper Herring Spawning Beds are within ½ mile of the outfall, Oyster Fishery, Lobster Fishery, and Scallop Beds will all be negatively impacted. Contaminants on bottom will spread. Fish will die or migrate elsewhere.</p>	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	<p>Herring Spawning Beds are within ½ mile of the outfall, Oyster Fishery, Lobster Fishery, and Scallop Beds will all be negatively impacted. Contaminants on bottom will spread. Fish will die or migrate elsewhere.</p>	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	<p>I also have concerns about the chemical emissions from the burning of sludge, as well as the impact on our tourist and fishing industries.</p>	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	I also have very strong concerns about the location of the outlet for this pipe and its potential effect on the fisheries in area 26A. Figure 6.3-1 of the Executive Summary prepared by Dillon Consulting purports to represent the fishing done in the vicinity of Caribou Harbour, yet there is no indication of the herring fishery or the fact that the area around the north side of Pictou Island is a important herring spawning ground. Personally, I have seen herring swarming in Caribou Harbour to its most easterly extent up to the wharf operated by the Little Entrance Fishermen's Association. Again, I find the data presented in Northern Pulp's Environmental Assessment Registration Document raises more questions than answers. Given the significance of the fishery in Caribou Harbour, I feel that the Precautionary Principle that guides consideration of the environmental impact of an effluent pipe into the area of Caribou Harbour should preclude any potential threat to the rich aquatic life that spawns in these shallow waters. Caribou Harbour should be a protected estuarial zone and in no way should it be considered an appropriate location for an outlet for industrial effluent.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	I am concerned about the impact the proposed effluent pipe will have on fish and fish habitats in the Northumberland Strait.	Individual Public Comment	Additional information on the impact assessment to the marine environment is also provided in Section 7.3 of the Focus Report. The Project is subject to the Fisheries Act and Pulp and Paper Effluent Regulations, which require long-term Environmental Effects Monitoring programs for water quality, sublethal toxicity testing, effluent quality and biological communities of invertebrates and fish.
Marine Fish and Fish Habitat	I am gravely concerned about untreated effluent going into our oceans. This water sustains life on our planet and the effluent must be treated. The lobster and fishing industries are vital to our livelihood here in Nova Scotia.	Individual Public Comment	The new effluent treatment facility will be on-site which will see only treated effluent leaving the NPNS facility after the new system is operational.
Marine Fish and Fish Habitat	I am greatly concerned with the damage the treated effluent will cause to the waters we swim in, beaches we play on and fish we consume.	Individual Public Comment	Additional information "Additional information on the effluent characteristics and impact assessment to marine fish are provided in Sections 3.3 and 7.3 of the Focus Report. There is also additional information on the Human Health Risk Assessment provided in Section 9.0 of the Focus Report.
Marine Fish and Fish Habitat	I have also added in the attached document the scallop buffer zone that the fishermen must abide by within their conditions for scallop fishing. This shows the difference in how Northern Pulp shows the buffer zone in their EA versus how DFO has set it in according to the Fisheries Act.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Marine Fish and Fish Habitat	I have major concerns involving this proposed treatment plant. I think a more thorough review is required and that this system will harm the Northumberland Strait. I am against this proposed project and its potential impacts on wildlife and lavre and oyster absorption of the chemical being discharged.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	I have major concerns involving this proposed treatment plant. I think a more thorough review is required and that this system will harm the Northumberland Strait. I am against this proposed project and its potential impacts on wildlife and lavre and oyster absorption of the chemical being discharged.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	I have not been able to find where any further studies have been done or that the effect of effluent of lobster larvae has been taken into consideration. As you can see from my experiment, our pulp mill effluent poses a sufficient risk to lobsters by the high morality of larvae.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	I have read carefully the document and its supporting documentation and am gravely concerned about many of the potential devastating impacts the proposal may have on the environment and, in particular, the Northumberland Strait ecosystem.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	I strongly urge you to acquire all the scientific information needed to properly assess the effects that this "unknown" effluent will have on the lobster larvae, herring spawn and human life.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	I wish to raise three points of concern with the project. First, as a fisherman I am concerned, that the proposed effluent pipe will be a detriment to the local fisheries, including that of lobster, rock crab and herring. The proposed outfall location is premium breeding grounds for all of these fisheries, and are of grave importance to the local area, as well as the entire economy of Nova Scotia. I feel as though there should be a greater deal of importance placed on protecting these fisheries.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	I would also like to see specific studies regarding the potential intrusion and accumulation of effluent-borne contaminants affecting the water quality in Caribou Harbour, Caribou Rivers and other nearby tributaries. Given my experiences within these waterways, I can attest to the significant incoming tidal currents passing the proposed outfall boundary, pushing water into Caribou Harbour many kilometers upriver of Big and Little Caribou River and into various lagoons and saltwater marshes. I worry that the constant ebb and flow in this area could lead to long term accumulation of pollutants, which could be detrimental to the health of these sensitive and important ecological areas that are home to a diverse range of aquatic and avian life.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	In addition to Human health being impacted by the presence of toxic pulp chemicals in food fish, the other great worry is for the decline of the lucrative Fishery in the Northumberland Strait and for the health of all marine species including species of birds who prey on fish.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	In every single category they predict "No Significant Residual Effect"; how convenient ! Dumping up to 70 million litres of effluent into the ocean, 24 hours per day, 7 days per week, 365 days per year..... Non stop. Common sense would tell you that HAS to have some residual impact ! To my knowledge, Northern Pulp have NOT studied what the effects effluent will have on Lobster Larvae or Herring eggs or Juvenile Rock Crab; let alone Tuna, Porpoises, or Whales. In fact, they state in the Environmental Assessment document that they don't know for sure what composition the effluent will be. They "anticipate" it will meet federal guidelines. And if it doesn't ? Does the Strait become the next Boat Harbour ? How do you clean up an ocean where its not contained ?	Individual Public Comment	Additional information on the effluent characteristics and impact assessment to marine fish are provided in Sections 3.3 and 7.3 of the Focus Report. Northern Pulp will complete environmental effects monitoring programs (EEM) programs in accordance with the Pulp and Paper Effluent Regulations under the Fisheries Act. These EEM programs include quarterly sublethal toxicity testing for fish and invertebrates.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	In Northern Pulps submitted environmental assessment, the pipe would be required to be set at a depth below the seabed of 3 meters due to potential from ice damage. To accomplish this, they submit the trench would have to be 9 meters across, for the entire length of 4.1 kilometers from where it enters the harbour adjacent to the ferry dock, to the mouth of the harbour, the proposed discharge location. The sediment alone from this construction would destroy the local fishery and directly breaches section 35 of the Federal Fisheries Act as it will destroy marine habitat, eelgrass beds, etc., killing juvenile fish, lobster and crab. The sediment dispersed will cause havoc with the marine environment for miles and for how long, is anyone's guess.	Individual Public Comment	Concerns are noted and understood. NPNS through its experts known worldwide have recommended the best available science, engineering and design with environmental safety at the highest priority level. Fishing and forestry industries have co-existed for decades in this region, a scenario that is expected to continue with no impact.
Marine Fish and Fish Habitat	inside Caribou harbour consists mainly of shallow soft sand and mud bottom with portions of broken hard bottom. Such seafloor characteristics create a favourable environment for the rock crab population to flourish. While harvesting rock crab throughout LFA 26A fishers have observed that this inlet presents optimal conditions for juvenile and female rock crabs. If you place traps within the harbour (south/southwest of Munros Island or directly east of the ferry terminal) the majority of the harvested catch appears to consist of small juvenile crab including a high percentage of females. As you move out of the harbour along the proposed pipe route and along the shore east and west the percentage of harvestable rock crab (a rock crab of legal size) within the catch appears to significantly increase. Traps placed further offshore in deeper waters tend to have a catch rate with the majority of the catch consisting of large harvestable crabs with very few undersized crabs. Over the years all of the above has remained consistent and local fishers have concluded that the Caribou harbour acts as a breeding ground and an optimal environment for juvenile rock crab to mature before moving to deeper waters. This raises the major concern of what effect will this effluent have on these juvenile rock crab and the rock crab population as a whole? Not to mention the chain reaction that would occur throughout other species including lobster whose diet consists of a large percentage of rock crab (Fisheries & Oceans Canada, 2012).	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	ISSUE C is the known effect of Pulp Effluent on health to marine life. Death, suppressed reproduction, liver damage, abnormal growth and malformations can occur. Northern Pulp seem unable or unwilling to supply chemical components of final effluent.	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3. Additional information on the effluent characteristics are also provided in Section 3.3 of the Focus Report.
Marine Fish and Fish Habitat	It is also a very important area for among other like lobster, crab and herring, it also includes species of concern like Atlantic Salmon and Stripe Bass. Northern Pulp and their consultants/ contractors have not completed the survey work for the area yet somehow concluded that there will be no adverse affects.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	It is important to note that the values and distances in the Stantec reports Stantec 2017, Stantec 2018 have been generated through modelling and not through onsite testing. Therefore, if modeling predictions prove to be inaccurate, then the predicted impact on lobsters as described in this report are invalid. Therefore, the information as stated in the findings of this report all hinge on Stantecs modelling reflecting real world conditions, which cannot be validated as a Detailed design has not been completed for the construction of the marine outfall and pipeline.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	It is not predicted that the installation of the pipeline will result in long term serious harm to fish or fish habitat? Again, the key term to consider in the above statement is It is not predicted? This is far from a certainty and the repercussions of this assumption will be devastating and long-term to not only the environment but the entire economy of the province.	Individual Public Comment	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.
Marine Fish and Fish Habitat	It should be noted that this proposed outfall site was chosen late in 2018, and appears to have not undergone any detailed analysis of a baseline water quality analysis the area. the Pictou Harbour water quality data is being used as "a proxy for Caribou Harbour with respect to water quality, in the absence of available water quality data for Caribou Harbour)" Using Pictou Harbour as a baseline is contradicted in 9.2.1 stating that Pictou Harbour and other surrounding areas are prohibited from local shellfish harvesting due to water quality issues whereas in Caribou area "there are several active recreational and commercial fisheries in the area and there are also currently four provincially licensed marine shellfish aquaculture operations (all for American Oyster) in the vicinity of Caribou and Munroes Island, which are located relatively near to the location of the proposed effluent diffuser (CH-B)." The fact that a commercial bivalve fisheries exists in this area and are prohibited in the "proxy" reference area is evidence enough of the dissimilarities that should warrant that specific baseline measurements are performed in the new outfall location.	Individual Public Comment	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.
Marine Fish and Fish Habitat	It will affect more than fish. See Appendix N in the Project proposal for rare, threatened or endangered flora and fauna. There are many listed within less than 5 km from the project site.	Individual Public Comment	Additional baseline surveys for wildlife, plants and herptiles were completed in 2019. This information and the potential effects of the Project are provided in the Focus Report.
Marine Fish and Fish Habitat	Little analysis has been done on the impact on larval lobster and the Northumberland Strait is already loaded with many cumulative environmental stressors.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Many of the marine life species that exist in this ocean today are saltwater species that have reproduction life cycles around controlled consistent water temperature. Dumping this effluent into the breeding grounds of these species is a disaster waiting to happen. Mercury!! that NP did not include in their EA is present in effluent. Not only will it impact the marine life it will impact and cause harm to those who consume it.. Humans, other fish species, mammals, etc	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location. Refer to sections 7.3 for potential impacts to marine fisheries.
Marine Fish and Fish Habitat	Many of the marine life species that exist in this ocean today are saltwater species that have reproduction life cycles around controlled consistent water temperature. Dumping this effluent into the breeding grounds of these species is a disaster waiting to happen. Mercury!! that NP did not include in their EA is present in effluent. Not only will it impact the marine life it will impact and cause harm to those who consume it.. Humans, other fish species, mammals, etc	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location. Refer to sections 7.3 for potential impacts to marine fisheries.
Marine Fish and Fish Habitat	Meeting PPER does not prevent harm to marine life or marine habitat per Environment Canada	Individual Public Comment	The PPER does prevent harm to marine life, as the definition of "fish" under the Fisheries Act includes marine fish, crustaceans and shellfish. The PPER is a regulation under the Fisheries Act. Environmental Effects Monitoring Studies and Sublethal Toxicity Testing Studies are a requirement for effluent that is deposited into marine environments as per the PPER.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	My concern is the impact on my fishing industry, how do we truly know that the effluent coming out of the proposed pipe won't kill all the fish and furthermore who with be crazy enough to purchase the seafood if they actually do survive because everyone nation and world wide would know that those lobsters crab herring etc swim in mill run off	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	My concern with this paragraph is that any chemical flushed through a pipe to discharge 70-90 million litres of effluent from a bleached Kraft mill is unacceptable for this day and age. Mill wastewater continues to wreak havoc on surrounding ecosystems. Common sense can tell someone if chemicals are flushed into a water area then the first to digest the chemicals are zooplankton, plankton and krill which are the main food source for larger marine life. Then the lobster, herring, crab and tuna will ingest these contaminants and then eventually humans eat the polluted food supply. The fish get contaminated and so do the people who eat it, which can cause exorbitant health problems in the future for humans. So basically we should not eat the food in the ground or fish the marine life and be watchful of our drinking as there is a potential for human exposure. So how do we live what is left?	Individual Public Comment	The Project is subject to the Fisheries Act and Pulp and Paper Effluent Regulations, which require long-term Environmental Effects Monitoring programs for water quality, sublethal toxicity testing, effluent quality and biological communities of invertebrates and fish. Additional information about the Human Health Risk Assessment and impact assessments for valued environmental components is also provided in the Focus Report.
Marine Fish and Fish Habitat	My concern with this section is the unsure effect that can happen to the water supply, fish and marine life and human safety if there is an accidental release of dangerous material. We are talking lives and the rich ecosystem that is being put at stake all for this company and their wealth, Northern Pulp had a recent leak in October 2018 although the Company did not think it was a huge deal because to them it was just a small one. It does not matter the size of the leak, it is the fact that it went unnoticed by the Company as it was reported by a couple out walking. There was another one at this plant 5 years ago. (CBC News (2014) "Northern Pulp mill shut down due to effluent leak" CBC, 10 June). Then in 2008, the underwater pipe broke and caused a lengthy shutdown of the mill. The Provincial taxpayers either loaned or gave the \$15 million to make sure this would not happen again and then for it to happen so soon again is a huge concern. I question the NP inspections and how many leaks are happening that the community is not aware of? And if a pipe is underground it will never be noticed!	Individual Public Comment	A description of the effluent pipeline leak detection procedures and technology are provided in Section 3.5 of the Focus Report. Additional information on the contingency measures are provided in Section 7.5 of the Focus Report. Northern Pulp has also developed an Environmental Planning and Mitigations Measures document (Submission Appendix A2.1-2) that contains information on the mitigation measures related to activities in the marine environment.
Marine Fish and Fish Habitat	My first concern relates to the yellow signs that appeared all along our shore a number of years ago warning us not to eat the shellfish. When these signs went up it made me worry about the quality of our water. Why can't we safely consume shellfish? It seems that while municipalities and property owners are working to improve water quality, Northern Pulp is only making our water worse. Will we ever have a time in the future when the yellow signs won't be needed?	Individual Public Comment	Information about Treated Effluent Quality is available in Section 2.4 of the Focus Report. The Safety of Shellfish consumption is determined by the Regulatory Authority.
Marine Fish and Fish Habitat	My fishing grounds are the waters along Caribou Island. It is an extremely fragile area. It is extremely sensitive to water temperature changes. If we get a Nor'easter the water becomes brown with sediment. It takes several days for the sediment to clear and fish to return. Northern Pulp proposes to dump 90 million litres of effluent per day on this area. Northern Pulp estimates that the proposed pipe will dump 48 mg of Suspended Solids per litre into the Strait. For a grand total of 4.32 tonnes of Suspended Solids per day. This is daily. That is 1,576 tonne per year. The area will never have a break / never be given a chance for it to recover. The long term effects of this have to be studied.	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	My second concern relates to recreational sea bass fishing. This is an activity I enjoy very much from my shoreline and I fear that with continued effluent entering our water that this activity may go the way of shellfish harvesting. I suggest that more research needs to be done to ensure the safety of our waters.	Individual Public Comment	Additional information on the effluent characteristics and impact assessment to marine fish are provided in Sections 3.3 and 7.3 of the Focus Report. Northern Pulp will complete environmental effects monitoring programs (EEM) programs in accordance with the Pulp and Paper Effluent Regulations under the Fisheries Act. These EEM programs include quarterly sublethal toxicity testing for fish and invertebrates.
Marine Fish and Fish Habitat	No current data regarding the significant adverse effect that the proposed outfall will have on the area has been done. I have seen first hand how extremely sensitive to wind and weather and the resulting silt has on lobster and crab fishery in this area.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	No toxicity test on saltwater fish is required to meet federal regulations. There are no federal regulations for a number of known harmful substances in pulp effluent, including AOX and phenols so further study is needed before this pipe is installed.	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3. Additional information on the effluent characteristics are also provided in Section 3.3 of the Focus Report.
Marine Fish and Fish Habitat	Northern Pulp has never assessed the impact of lobsters before the pipe goes into the Strait so it may not be addressed for years once the pipe is in the Strait. Northern Pulp does not know the long term effects on Caribou Harbour if a pipe goes into the Strait.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Northern Pulp has not performed any actual lobster or herring larvae studies and have no idea as it pertains to the detrimental impact the effluent will have regarding bio accumulative effects on the numerous bivalve shellfish, finfish, lobster, crab, or any of the associated species larvae.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Northern Pulp have listed some of the potential impacts on Marine species in the Northumberland Strait in their submission. The plan to mitigate the risk is weak at best and meets regulations. Meeting regulations is not good enough when the Strait is at its max threshold for pressures.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Northern Pulp suggests that there will be "no significant" affects of the effluent from the pipe on Fish, Fish Habitat, Flora, Sediment Quality or on the Social and Economic Environment in and around Caribou Harbour and the Northumberland Strait. It is hard to believe that they could propose this without any understanding of how much of the solids, how much silt, what smell, what measure of 'plume' or what temperature of water will be issued from the end of the pipe on any given day and what effects each will have. Water temperature and effluent will affect the fish/lobster/oyster/ life of the immediate water area and the fishing industry as a whole, including licences for shellfish just offshore.	Individual Public Comment	Additional information on the pipeline re-alignment, the Project design, supplementary baseline surveys completed in 2019, effluent characterization and dispersal, as well as human health risk assessment and environmental impact assessments are provided in the Focus Report.
Marine Fish and Fish Habitat	Northern Pulp's proposal lacks important data on the risk to the fisheries making its claims that harm is "not likely" not credible. Caribou Harbour, the proposed receiving site for the effluent pipe, is a critically important fishing and spawning ground for lobster, rock crab, herring, ground fish, and many other species. Damage to that habitat will have an adverse impact on communities throughout the Strait region	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	Northern Pulp's EA suggests to avoid ice damage to the effluent pipe, a trench 9 meters wide by 3 meters deep for 4.1 kilometers in length to the discharge point would be installed. This construction would directly breach section 35.1 of the Federal Fisheries Act as it will kill fish and destroy fish habitat. 11. The 62 to 90 million liters of hot, according to Northern Pulp, summer temperature of effluent at the discharge point will be 38 degrees Celsius, treated effluent daily, containing approximately 1000 kg of solids which technically are toxic waste, will negatively impact and kill lobster and herring larvae directly breaching section 36 of the Federal Fisheries Act.	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location.
Marine Fish and Fish Habitat	Northern Pulp's report consistently cites a paper from the 1960's that deals with lobster larvae exposure to effluent. Would it not be better to do some updated research on the subject? Also in appendix R, its stated that larvae as well as adult lobsters will be unaffected within a certain distance from the diffuser? How can this be? will there be a fence holding all the effluent in? introducing a constant flow into the area will permanently change the makeup, and this will be a constantly changing number? Eventually that 2-10 meters could be 2-10 miles? How do we know for sure? There is very little research conducted in this area. This effluent is not going to stay in one spot, and will spread like a disease, and I'm not willing to risk that disease killing off one of the most commercially important fisheries in the province.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Not enough is known about the proposed effluent discharge. It is unknown how the effluent will effect a marine environment, especially an environment of tremendous cultural and vocational value. The federal standards now in place are outdated , 65,000cubic meters a day of heated effluent can only have a detrimental and unbalancing effect on a delicate and understudied environment. Northern pulp has proven to be a bad environmental actor and cannot be trusted to temper its corporate greed in the interest of a clean environment	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3.
Marine Fish and Fish Habitat	Nowhere in the document does it discuss the very real possibility of the effluent causing hypoxic conditions within the waters of the Northumberland Strait. Nor does it appear to discuss the effects of warmer effluent entering sensitive ecosystems other than to state the distance it will take for the water to reach an ambient temperature or the ongoing challenges this will create with climate change.	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location.
Marine Fish and Fish Habitat	Ocean stresses are increasing generally. Anoxic areas, where there is insufficient oxygen for marine life, are growing, and are expected to continue to do so due to global warming and other factors. The discharge of pulp effluent, with significant amounts of total suspended solids, biochemical oxygen demand, chemical oxygen demand and contaminants including heavy metals and AOX, has to be evaluated in the context of cumulative impacts on an increasingly stressed ecosystem. The consequences will be greater now and in coming decades than they would have been 50 or 25 years ago in healthier oceans.	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	Of major concern is that Northern Pulp's associated effluent will be harmful to the receiving waters of the Northumberland Strait and its marine life habitat	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3. Additional information on the effluent characteristics are also provided in Section 3.3 of the Focus Report. Note that long-term monitoring will be a requirement of this facility under the Pulp and Paper Effluent Regulations of the Fisheries Act.
Marine Fish and Fish Habitat	On the larger scale, the effluent will raise water temperature and the chemical composition of the Strait which is likely to have disastrous effects on marine life and threatened the livelihoods of the large number of individuals engaged in fisheries, which will be much worse than the loss of some mill jobs.	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3. Additional information on the effluent characteristics are also provided in Section 3.3 of the Focus Report. Note that long-term monitoring will be a requirement of this facility under the Pulp and Paper Effluent Regulations of the Fisheries Act.
Marine Fish and Fish Habitat	Operational processes and boundaries include the piping of hot effluent into the marine environment. Thermal pollution and its contribution to global warming are not discussed in the NP Proposal.	Individual Public Comment	Additional information on effluent temperature is provided in Section 7.5 of the Focus Report. Additional information on the impact assessment to the marine environment is also provided in Section 7.3 of the Focus Report
Marine Fish and Fish Habitat	Other points that are of concern to us from the Northern Pulp proposal are as follows: The waste proposal poses major risk to harming marine life, marine habitat, species at risk/endangered/threatened that include migratory and marine birds, fish, vegetation, reptiles etc.	Individual Public Comment	Additional surveys in the terrestrial environment and marine environment were completed in 2019, and revised impact assessments of the Project on various valued environmental components are described in the Focus Report.
Marine Fish and Fish Habitat	Our fishermen, their families and local businesses rely on this rich ecosystem for their livelihood and prosperity. The proposed effluent pipe threatens our entire way of life and must be stopped.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Page 82 lists a number of things that Northern Pulp should have completed before filing let alone obtaining approval. They include: various approvals, avian/turtle studies, MEKS field studies, Archaeological shovel testing for pipeline, geotechnical land surveys for land portion of pipeline, marine seismic testing, habitat and confirmation of marine pipeline alignment. Still no mention of testing effluent on creatures like lobster, crab, Atlantic Salmon, striped bass...	Individual Public Comment	Refer to section 4.1 for comments concerning baseline line studies for the marine environment such as marine water quality and marine sediment.
Marine Fish and Fish Habitat	Piping the warm, dilute effluent out into the Northumberland Strait is creating an unacceptable and irresponsible risk to humans and to the lobster and other shellfish industry. As commented upon by Dr. John Krawczyk, MD, Kings Head, NS, Nova Scotia Advocate, March 6, 2019. Pumping toxic effluent directly into the Northumberland Strait is not an acceptable alternative for all the above reasons. The effluent will not be toxin free no matter how it is treated and will bioaccumulate in bivalves mussels, scallops, oysters and lobsters. Seafood will be contaminated.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Pumping toxic effluent directly into the Northumberland Strait is not an acceptable alternative. The effluent will not be toxin free no matter how it is treated and will bioaccumulate in bivalves (mussels, scallops, oysters) and lobsters. Seafood will be contaminated. When the pipe leaks the watershed or our land will be contaminated.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Risk of jeopardizing an entire marine environment in the Northumberland Strait will warrant conscientious federal consideration under the CEPA.	Individual Public Comment	Additional information on the impact assessment to the marine environment is also provided in Section 7.3 of the Focus Report. The Project is subject to the Fisheries Act and Pulp and Paper Effluent Regulations, which require long-term Environmental Effects Monitoring programs for water quality, sublethal toxicity testing, effluent quality and biological communities of invertebrates and fish.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	Secondly, I would like to raise an issue with the effluent itself, that being the proposed temperature of the effluent when it exists the pipe. On page 46 of Northern Pulp's report, is the table that comprises of the anticipated daily maximum effluent water quality. In this table it states that the temperature of the effluent will be 37 degrees Celsius in the summer, and 25 degrees Celsius in the winter months. This is just too warm. It is unacceptable to be pumping anything into the Strait at this temperature, as it can be extremely harmful to the ecosystem.	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location.
Marine Fish and Fish Habitat	Shellfish, such as scallops which I also commercially fish, absorb dioxin and furans at 25,000-50,000 times the concentration in the water. Cumulative effects would cause deformities, and embryo larval mortalities in fish, chronic effects include significant irreversible factors which jeopardize the continuance of the species and the integrity of the ecosystem (Environment Canada, 1991). Further to accumulative effects on marine life the FOIPOP done by had a letter from the Dept of Environment stating that Northern Pulp should have a study on accumulative effects of BKME on marine life, this was not completed, another gap in the EA.	Individual Public Comment	Additional information on the effluent characteristics and impact assessment to marine fish are provided in Sections 3.3 and 7.3 of the Focus Report. Northern Pulp will complete environmental effects monitoring programs (EEM) programs in accordance with the Pulp and Paper Effluent Regulations under the Fisheries Act. These EEM programs include quarterly sublethal toxicity testing for fish and invertebrates.
Marine Fish and Fish Habitat	Should any of the sensitive aquatic organism, marine mammals, birds, fish be adversely impacted, would the repercussion on Nova Scotia's fishing industry be at all similar as to when Alberta discovered in 2003 one black Angus cow to have bovine spongiform encephalopathy (mad cow disease) which caused the United States to immediately close its borders to Canadian beef and cattle which in turn caused about another 40 countries to follow suit?	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Should the effluent from the treatment facility contaminate fishers products the world will recognize this as contaminated fish from Nova Scotia not just from the Northumberland Strait. The resulting downgrade of our fish products will affect all Nova Scotia fish products if not all Canadian fish products and therefore the livelihood of thousands of fishers.	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3. Additional information on the effluent characteristics are also provided in Section 3.3 of the Focus Report. Note that long-term monitoring will be a requirement of this facility under the Pulp and Paper Effluent Regulations of the Fisheries Act.
Marine Fish and Fish Habitat	Since I am a lobster licence holder, the new treatment facility outfall is a major concern - what effects will it have on lobsters and their habitat as well as the lobsters reproduction system which includes their larvae. This information is so important because it is what will allow the survival and future sustainability of our industry. In Appendix R of Northern Pulp's EA is where you find the lobster study information which is very limited. Here in the executive summary it states ". It is important to note that the values and distances in the Stantec reports (Stantec 2017, Stantec 2018) have been generated through modelling and not through onsite testing. Therefore, if modeling predictions prove to be inaccurate, then the predicted impact on lobsters as described in this report are invalid. This statement here concerns me as to how valid the receiving waters study is as well the lobster study. This area needs much much more information and in-depth studying to ensure our lobster and larvae are not harmed from the effluent leaving the outfall location.	Individual Public Comment	Refer to section 9.1 for comments concerning baseline studies for fish and shellfish tissue of key marine species in the vicinity of the pipeline diffuser location (HHRA).

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	Studies to more accurately assess the potential for impact to adult lobsters including lethality, behavior, and sublethal impacts are recommended to be carried out with current treated BKME. Completing studies of lobster larvae with today's treated BKME would allow for confirmation and better understanding of potential lethal and sublethal effects. Therefore, the previous article on the Effect of Bleached Kraft Mill Effluent on the American Lobster cannot be verified as being accurate until studies are completed using BKME from the new ETF, making the study irrelevant.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Sub lethal exposure may still affect the physiology and gene expression of the fish and/or shellfish and this is something we need to understand. We know many of the halogenated organic compounds affect the reproductive and immune systems, and can lead to developmental disorders or cause cancer. In addition, gene expression experiments help gain a better understanding of the exposure effects on protein and enzyme production which gives us an idea of how the effluent will influence the function of biological processes. I request gene expression profiling experiments be performed on fish and shellfish that are exposed to the effluent at concentrations consistent with what will exit at the diffuser final effluent? Table 5.2-1 (also presented in Table 5.6-1) provides information on the anticipated daily maximum treated effluent water quality as reprinted from the Receiving Waters Study (Appendix E). The Receiving Waters Study indicates that this data was provided by KSH (the design consultant for the effluent treatment system). No supporting documentation was provided from KSH as part of the EA submission. How was the treated effluent water quality data presented in Table 5.2-1 and Table 5.6-1 calculated? What level of accuracy is the data?	Individual Public Comment	Additional information on the effluent characteristics and impact assessment to marine fish are provided in Sections 3.3 and 7.3 of the Focus Report. Northern Pulp will complete environmental effects monitoring programs (EEM) programs in accordance with the Pulp and Paper Effluent Regulations under the Fisheries Act. These EEM programs include quarterly sublethal toxicity testing for fish and invertebrates.
Marine Fish and Fish Habitat	The complex tides in this area, both in speed and direction, would ensure that the effluent would settle out across the entire remaining herring spawning grounds. This is the most dynamic area in the Eastern Northumberland Strait and a critical spawning ground for Lobster, Rock Crab, Herring, Ground fish and many other species.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Marine Fish and Fish Habitat	The concluding paragraph of section 14, page 588 states "Overall, based on the results of this EA Registration, it is concluded that, with planned mitigation and the implementation of best practices to avoid or minimize adverse environmental effects, the residual environmental effects of the project, including the effects of accidents, malfunctions and unplanned events as well as cumulative environmental effects, during all phases are rated not significant." Is this a logical conclusion considering that it is stated no field work was conducted with regards to Harbour Physical Environment, Water Quality and Sediment Quality (Section 8.11) nor with regards to Marine Fish and Fish Habitat (Section 8.12)? My second question is: Not significant to whom? Perhaps not to the owners of Northern Pulp. They don't need to care about the marine environment in Atlantic Canada. They don't need to care about the well-being of those who live along the Northumberland Strait. They don't need to care about the livelihoods of those who work in the fisheries or in tourism. They don't even need to care about the forestry workers in this area. They can simply continue to live their lives far from here, no matter what happens with their predictions and assumptions.	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3. The assessment of significance is defined in the Environmental assessment registration document, Section 7. The significance references potential for impact to the valued environmental component.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	The construction of a 4 km trench, 9 m wide and 3 m deep, would most certainly result in a SIGNIFICANT impact on the ocean floor. Construction activities and resulting sediment would have significant negative effects within Caribou Harbour and beyond. Then the introduction of 60-90 million liters of treated effluent each day would certainly have an effect on marine habitat, lobster larvae, lobster and herring.	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3. Additional information on the effluent characteristics are also provided in Section 3.3 of the Focus Report. Northern Pulp has also developed an Environmental Planning and Mitigations Measures document (Submission Appendix A2.1-2) that contains information on the mitigation measures related to activities in the marine environment. Note that long-term monitoring will be a requirement of this facility under the Pulp and Paper Effluent Regulations of the Fisheries Act.
Marine Fish and Fish Habitat	The current proposal is full of models, assumptions, and simulations yet in the final analysis we cannot tell what will happen to the Northumberland Strait marine environment and its fisheries and our health should the toxic effluent pipe be approved and constructed.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	The deficiencies in the document raise serious concerns with respect to its conclusions on the potential significant environmental effects on the valued ecosystem components.	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish, marine environment, and migratory birds were completed. This information can be found in the Focus Report sections 4.0, 7.2, 7.3, 8.0. Additional information on the effluent characteristics are also provided in Section 3.3 of the Focus Report.
Marine Fish and Fish Habitat	The document states there is no detailed design available for the main effluent outlet, and that the proposal in the Registration document was prepared without field work in the marine environment.	Individual Public Comment	Additional information on the revised project design are available in Section 2.0 of the Focus Report. Additional information on the effluent characteristics are also provided in Section 3.3 of the Focus Report. Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3.
Marine Fish and Fish Habitat	The double-barreled punch of a high nutrient load along with higher temperatures will be absolutely devastating for the Strait. Boat Harbour currently buffers these stressors by lowering the temperature of the pollutants and removing a great deal of the solid biomass. With current ocean research demonstrating that our waters cannot adjust, cannot adapt and are indeed suffering much like our forests are with the effects of climate change, how can we justify adding up to 90 million litres of effluent per day into an already-stressed ecosystem?	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location.
Marine Fish and Fish Habitat	The EA shows that assessments by NP need to be completed for DFO in relation to fish habitats. "Geotechnical investigation will be completed in order to facilitate detailed design and provide sufficient information to estimate the harbour/marine footprint of the pipeline/outfall. Habitat assessment and preliminary proposed project footprint information will form a component of a DFO Request for Review to determine authorization requirements under the Federal Fisheries Act." If this study hasn't been done and DFO can't authorize the pipe due to concern over potential serious harm to fish, the province shouldn't be able to authorize the project as Northern Pulp wouldn't have been able to show that it would be operational before the decision by the Minister for the Environment is made.	Individual Public Comment	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.
Marine Fish and Fish Habitat	The effects of high effluent temperatures on an already-warming Strait. There is a lack of climate-change modeling to account for higher ocean temperatures.	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	The effluent will be discharged directly into prime fishing grounds. This will greatly affect the marine life. Just the difference in the water temperature, not to mention the amount of chemicals, discharging from the pipe, destroying the ecosystem of several species of fish, birds etc. The timeline of the release of the effluent into the lagoons of the heavily polluted Boat Harbour, gave it extra time to cool the water and settle some of the heavy toxins. This will no longer be the case as it will be piped within an 8-9 hour period directly into the Northumberland Strait, removing the 30 day period it had to cool and settle. It will destroy the Northumberland Strait as we know it.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	The lack of any current, peer-reviewed studies to demonstrate the lack of toxic effects from the effluent on lobsters or other fish in the Strait and the fact that this proposal claims to meet current regulations when in reality, the regulations themselves are outdated and weak.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	The levels of whole effluents discharged from Canadian bleached pulp mills to the aquatic environment and the resulting acute and chronic effects observed both in the field and in the laboratory combine to represent a significant risk to the aquatic ecosystem.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	The list goes on and on with reproductive effects being flagged in most instances. Poorly understood "reproductive effects" are not too comforting when the herring stock is in need of rebuilding and this project proposes to saturate the spawning grounds with toxic effluent.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	The long term impact of millions of litres of effluent a day going into the body of water, needs to be studied and reviewed for impact on water quality, ocean biology impacts, breeding and health of the fish and shellfish, human health including swimming and consumption of fish.	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3. Additional information on the effluent characteristics are also provided in Section 3.3 of the Focus Report. Note that long-term monitoring will be a requirement of this facility under the Pulp and Paper Effluent Regulations of the Fisheries Act.
Marine Fish and Fish Habitat	The makeup of the toxic chemicals that will be part of the effluent will also pose major threat to marine life. Furthermore, the effluent would contain chlorines, dioxins, metals, among other toxic constituents and will contain 935kg of solid materials per day. All of these can bioaccumulate, having catastrophic effects on marine life. Laboratory studies using individual chlorinated organic compounds that are commonly discharged from bleached pulp mills have demonstrated effects such as deformities, as well as embryonic and larval mortalities in fish. These chronic effects will jeopardize the future of many fish species and damage the integrity of the ecosystem. It is documented that Dioxins contaminate fish and shellfish because fish act like sponges for Dioxins, accumulating them at 25,000-50,000 times the concentrations present in their environment. It also is reported that fish species 250 miles away from the source have been impacted. The other obvious threat to the Strait is the colour of the water will change.	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3. Additional information on the effluent characteristics are also provided in Section 3.3 of the Focus Report. Note that long-term monitoring will be a requirement of this facility under the Pulp and Paper Effluent Regulations of the Fisheries Act.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	The outfall diffuser location is also an area of concern. The proposed location of the outfall diffusers is just beyond the inlet to Caribou Harbour. This area is known to have issues with sedimentation, infilling, and ice scour. It is not clear from the EA filing if this has been considered and how infilling may affect the performance of the diffusers. It is conceivable that it could result in blockages that would disrupt the diffusion patterns that are needed to ensure proper mixing to get the effluent within the legally required tolerance levels at the prescribed distances from the outflow pipe. As there is no information on the spatial and temporal distribution of fish migration routes or congregation points it is difficult to predict how changes to diffusion patterns could affect salmonids and other species. Additionally, the concealed nature of the diffusers means that issues with the effluent or with the diffusion pattern may not be detected in a timely manner.	Individual Public Comment	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.
Marine Fish and Fish Habitat	The Pictou Landing First Nations and the public have many concerns and unanswered questions about this project since it has been proposed. The destruction of a fish habitat and the environment is of the utmost importance and critical. Once the environment and marine ecosystem is damaged it will create a negative ripple effect throughout the area that may never be repaired or take years to restore.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	The pipeline also has the potential to cause mass devastation, not only to lobsters, but to other species within the environment as well. Pelagic species of fish and bivalves (such as mussels, scallops and oysters) would be contaminated or killed off by the effluent, or from the extreme temperature of the effluent, as noted in Table 5.2-1 found on page 46 of Northern Pulp's Environmental Assessment Registration Document	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	The potential effects on species at risk has been ignored, the proposed site of the pipe goes through a rock crab nursery which feed the lobsters; there is a herring spawning bed in close proximity to the site of the pipe; not to mention other protected species such as piping plover, hawks and eagles. How will these protected species be affected by not just the effluent, but the construction of this pipe?	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species. An environmental planning and mitigation measures document has been prepared to address mitigation for sensitive species and other environmental concerns. Additional surveys were completed, and the pipeline has also been re-aligned. Details are provided in the Focus Report.
Marine Fish and Fish Habitat	The proposal did not consider the behaviour of herring. Herring gather in the deep waters of the ferry channel and other deep water areas to get away from predators. They come out of the deep waters at night to spawn on the shallow banks in the adjacent areas. If fresh, hot water containing who knows what is pumped into their deep water hiding zone, the herring will not go there and will have nowhere to hide. I believe this will have irreversible effects on the herring species in the area, and their spawn.	Individual Public Comment	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.
Marine Fish and Fish Habitat	The proposal does not include lobster larvae tests or tests on herring spawning grounds, thereby indicating these effects are unknown. This is a particularly glaring omission given that these tests were specifically requested by those directly affected by potential negative effects of the effluent.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	The proposal goes through the Pictou town and Caribou water supply. A provincial park and a nature preserve are within the effluent pipe footprint Meeting Pulp and Paper Effluent Regulations PPER does not prevent harm to marine life or marine habitat per Environment Canada.	Individual Public Comment	Additional information on the Project re-alignment and potable water supplies are provided in the Focus Report. The PPER does prevent harm to marine life, as the definition of "fish" under the Fisheries Act includes marine fish, crustaceans and shellfish. The PPER is a regulation under the Fisheries Act, which falls under Fisheries and Oceans Canada. Environmental Effects Monitoring Studies and Sublethal Toxicity Testing Studies are a requirement for effluent that is deposited into marine environments as per the PPER.
Marine Fish and Fish Habitat	The proposal lists potential operational effects on marine fish species on p.385. The list includes the change in temperature as a result of effluent discharge, but does not elaborate on the extent of the effects this could have on Atlantic salmon or any other species for that matter. Furthermore, there are no mitigation measures listed for this temperature increase. On p.389, they say that the temperature of the water will be within 0.1 degree Celsius of the background temperature at the end of the 100m mixing zone. I find it challenging to believe that a continuous discharge of 62 to 90 million litres of effluent daily would not have a more profound effect on the temperature of a much larger area in the Northumberland Strait over the the course of several decades (Northern Pulp has been vague about the potential lifespan of this project once complete in their Project Schedule on p.81).	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location.
Marine Fish and Fish Habitat	The proposed Northern Pulp pipe outfall location in Caribou Harbour is a critically important fishing and spawning ground for lobster, rock crab, herring, ground fish, and many other species. Current toxicity tests are based on a "kill test" scenario, where the number of trout left in a bucket of effluent determine how dangerous the effluent might be to the species affected. This is simply not good enough in 2019. The idea that NP's effluent "passes regulations" is simply inadequate and hollow.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	The receiving water area is part of a Marine Protected Area a scallop buffer zone.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	The report indicates that "...it was not possible to conduct field work in the new pipeline corridor or marine environment in order to inform this EA Registration" The rationale for not completing these biological assessments is that an alternative pipeline route and discharge location was identified in fall 2018 due to the presence of ice scour found in the originally proposed treated effluent discharge location. Presumably the timing of this discovery would have not allowed for biological field investigations in 2018. The report indicates that "Follow up field work as appropriate for the work proposed will be completed in parallel to the EA Registration review...". The full extent of biological impacts cannot be assessed without proper field work first being undertaken. The scope of the assessment should not be lessened due to construction time constraints and design delays based on site conditions As per the proposed project schedule, the project will not be completed prior to legislated closing of the BHETF anyways. NSE should require full biological assessments, which could be conducted in spring / summer 2019, prior to approval.	Individual Public Comment	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	The report indicates that "Scheduling of project activities will be coordinated through consultation with local fish harvesters, Northumberland Ferries and other stakeholders and best-efforts will be made to schedule activities to minimize interference" As per table 4.5.1 the proposed schedule for the construction of the marine pipeline is April / May 2020 – Oct. 2020 which entirely overlaps with lobster fishing season as well as the Northumberland Ferries operational season. The proposed project would likely be very disruptive to Lobster fishing as well as to Northumberland Ferries.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	The report indicates that the assessments listed below are not yet completed: • Avian / turtle follow-up field studies, • MEKS field surveys, • Vegetation, wetland and watercourse follow-up field studies, • Marine seismic, geotechnical and habitat surveys The potential environmental impacts of the proposed project cannot be fully assessed with this work not yet completed, in particular the marine habitat surveys. NSE should require these assessments be completed prior to granting approval.	Individual Public Comment	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.
Marine Fish and Fish Habitat	The report states that "It was determined in the receiving water study (Stantec 2018; Appendix E) that water quality at the end of the mixing zone for the three-port diffuser will reach ambient conditions within less than 2 m from the diffuser in terms of total nitrogen, total phosphorus, TSS, DO, pH, and salinity. Colour will return to baseline conditions within 5 m of the diffuser. Temperature will be within 0.1 °C of background at the end of the 100-m mixing zone." It is noted that given the project redesign initiated in fall 2018 no background water samples were collected from Caribou Harbour, therefore, background water quality data from the previous discharge location at Pictou Road (6km from the current proposed discharge site) was used. How can it be concluded that water quality will return to ambient conditions within 100m of the diffuser when no background water quality samples were collected in this area? Also no background information was collected for AOX, COD, or BOD. NSE should require the collection of background water samples from the proposed effluent discharge location before approving this project.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Marine Fish and Fish Habitat	The risks associated with this project include extensive damage to the ecosystem in the Northumberland Strait. This will directly impact the livelihoods of fishermen and fisherwomen in three provinces directly (Nova Scotia, New Brunswick and Prince Edward Island). This industry is a multi-billion-dollar business which exports seafood internationally. Just imagine what would happen if this pipe went in and the effluent is harmful to the marine life.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	The scallop buffer zone is not accurately depicted in Figure 8.12-10. The scallop buffer zone extends all around Munros Island and Caribou Island. The buffer zone is 1 mile from any point of land, which includes all islands.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	The scallop information in Figure 8.12-5 is not accurate. In the scallop logs fishers must complete, there is no place to enter fishing location for every area where scallops are fished. There is no way to determine where scallops are caught in the strait. This figure also shows scallop catches in areas where there is a buffer zone and therefore no scallop fishing in that area. This proves that the figure is not accurate and should not be relied on. It should also be noted that recreational scallop divers dive for scallops in the area behind Munros Island, and in the area around the outfall location. They are permitted to dive for scallops within the 1 mile buffer zone, but they don't keep logs or report where they have fished.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Marine Fish and Fish Habitat	The waste proposal poses major risk to harming marine life, marine habitat, species at risk/endangered/threatened that include migratory and marine birds, fish, vegetation, reptiles etc.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species. RAdditional information regarding the potential effects to fish, wildlife and vegetation are provided in the Focus Report (Sections 7 and Sections 8).
Marine Fish and Fish Habitat	The waste proposal poses major risk to harming marine life, marine habitat, species at risk/endangered/threatened that include migratory and marine birds, fish, vegetation, reptiles etc. All listed in the submissions via Northern Pulp.	Individual Public Comment	Additional surveys in the terrestrial environment and marine environment were completed in 2019, and revised impact assessments of the Project on various valued environmental components are described in the Focus Report.
Marine Fish and Fish Habitat	There are no studies done about the long term effects of this affluent on our fish species or shellfish species that are a mainstay to our local fishery.	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3. As with any pulp and paper facility, long-term monitoring will be a requirement under the Pulp and Paper Effluent Regulations under the Fisheries Act.
Marine Fish and Fish Habitat	There are species at risk where the pipe is proposed to go through rock crab nursery that provides food for the lobster fishery. There is also a herring spawning bed in close proximity to the proposed pipe.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	There has been no study about the effects on lobsters.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	There is a significant difference between the original project scope and the redesigned project as presented in the EA; namely the introduction of a 15.5km pipeline and an entirely new location for discharging the treated effluent into the marine environment. Critical information is missing from the submitted EA including any biological assessments along the routing of the on land pipeline (which passes through the watershed for the Town of Pictou's municipal groundwater supply) and no marine habitat surveys were completed in the area now proposed for treated effluent discharge.	Individual Public Comment	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	There was also a deficiency with respect to the impact zone modelling done by the proponent. Although we recognize modelling necessitates some educated guesswork, the assumptions used in the EA registration document, such as ambient temperatures and time of year, were not in line with when wild Atlantic salmon would likely be present in the impact zone, i.e. during the spring and fall congregation and migration periods. It is clear from the filing documents that there is some misunderstanding by the proponent of the biology and behavior of the species involved. For example, they cite papers noting that Atlantic salmon swim in the upper portion of the water column and suggest there will be a minimal impact because the outlet pipes are on the seafloor. This assumption is incorrect because while migrating Atlantic salmon are indeed pelagic (associated with the water column) as opposed to benthic (associated with the seafloor) the shallowness of the depths involved with the outfall and the impact zone will be well within the zone that would be occupied by salmon, and many other important fish species, migrating and congregating in that geographic area.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Thermal pollution is perhaps the most concerning aspect of this proposed project, in its deleterious effects on organisms and contribution to global warming.	Individual Public Comment	Additional information on effluent temperature is provided in Section 7.5 of the Focus Report.
Marine Fish and Fish Habitat	This is my comment concerning the effects of the pipe on our fishery. Caribou Harbour is one of the largest rock crab nurseries in the Eastern Gulf, containing millions of female and juvenile crab. The survival of the lobster industry in this end of the Northumberland Strait depends on the health of this rock crab nursery. Crab is the main food supply for lobster. Northern Pulp's plan to excavate a trench through the centre of this very special eco-system may spell the end of the lobster fishery in this area.	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3. Additional information on the effluent characteristics are also provided in Section 3.3 of the Focus Report.
Marine Fish and Fish Habitat	Thousands of people, consisting of fishers, fish buyers, deckhands, boat builders, restaurant owners, tourism operators --- living along the south shore --- are watching this unfold and have expressed grave concerns on social media about the negative impacts and reputation the pipe will have on the ENTIRE lobster/fishing industry and fish related exports.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Through the analysis it has been determined that under worst case conditions water quality at the end of the mixing zone for the three-port diffuser will reach ambient conditions within less than 2 m from the diffuser in terms of total nitrogen, total phosphorus, TSS, DO, pH, and salinity. Colour will return to baseline conditions within 5 m of the diffuser. Temperature will be within 0.1°C of background at the end of the 100-m mixing zone? The key term to consider in the above statements is Water quality has been assessed through modelling of the treated effluent discharge? It is not a certainty that results in actual conditions which are harsh and unpredictable will be the same as modelling that has taken place. Due to the importance of this, it again illustrates that modelling, testing and data needs to be completed by an independent, third party source.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.
Marine Fish and Fish Habitat	To describe benthic invertebrate habitat the report references a marine habitat survey completed by AMEC in 2015 for a different project. Does the AMEC habitat assessment cover the full extent of the marine project footprint area for the proposed project? It appears that no marine habitat survey was completed specifically for the proposed project. A new marine habitat survey should be completed prior to NSE making a decision on the proposed project.	Individual Public Comment	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	Waste effluent at 35 degrees C. or more will enter the Northumberland Strait killing marine life. This effluent thermal loading alone is deadly, regardless of BOD/COD/ heavy metals, total suspended solids, etc? The projected wastewater path via the diffusers, does not accurately address the thermal toxicity to marine life, the foul smelling oxides of sulphur by-products, the chronic heavy metals contamination from the Mills equipment, piping, pumps, chromium electroplated rollers, presses etc. which will enter the Northumberland Strait.	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location.
Marine Fish and Fish Habitat	We do not know the ingredients. They will start burning contaminated sludge without a thorough study of emission concerns, the environment, the fisheries, sea life and tourism. All are at risk the strait can freeze so how will the warmth flow impact lobster spawning grounds. Much further studies need to be done.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways). Section 2 of the focus characterizes the current untreated and untreated effluent, and presents the results of Bench Test results for the new treated effluent. Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	We have the utmost concern as to how this proposal will not only affect the environment, but the fishery, tourism, recreation and the general health and well-being of residents in Pictou county and beyond.	Individual Public Comment	Concerns are noted and understood. Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways). Section 2 of the focus characterizes the current untreated and untreated effluent, and presents the results of Bench Test results for the new treated effluent. Furthermore, refer to section 11.1 for comments relating to MEKS. Fishing and forestry industries have co-existed for decades in this region, a scenario that is expected to continue.
Marine Fish and Fish Habitat	We live right on the strait and worry about the effect this pollution will have on our environment, beaches and our fishing industry- especially the lobster larvae.	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3. Additional information on the effluent characteristics are also provided in Section 3.3 of the Focus Report.
Marine Fish and Fish Habitat	We recreationally fish bar clams, bass and mussels from the exact locations as well. Our freezer is full of bass, clams, lobster, scallops. If this pipe goes out and pumps and unidentified liquid at a relentless amount of 85 million liters per day, every day, all of this will be ruined. I cannot consume, nor give my child and other family member, friends and stranger, food that has ingested or absorbed an unidentified effluent!	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	What about the temperature difference of the effluent? According to NP the area affected will only be 100m from the discharge site. This is based on supposition not scientific fact and will have severe consequences to the fisheries (food over pulp please) for years to come.	Individual Public Comment	Additional surveys in the marine environment were completed in 2019 and an updated impact assessment on marine fish and the marine environment were completed. This information can be found in the Focus Report sections 4.0, 7.2 and 7.3. Additional information on the effluent characteristics are also provided in Section 3.3 of the Focus Report.
Marine Fish and Fish Habitat	What effect will these chemicals have both in the long and short term on the fish stocks in the strait?	Individual Public Comment	Additional information on the impact assessment to the marine environment is also provided in Section 7.3 of the Focus Report. The Project is subject to the Fisheries Act and Pulp and Paper Effluent Regulations, which require long-term Environmental Effects Monitoring programs for water quality, sublethal toxicity testing, effluent quality and biological communities of invertebrates and fish.
Marine Fish and Fish Habitat	What is the cumulative effect of long-term deposit of heated effluent into the Strait?	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	Whether environmental baseline information has been submitted for the undertaking is sufficient for predicting adverse effects: As we know now, Northern Pulp did not create any baseline data to understand any negative impacts to marine life or lobster larvae.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	While on the topic of lobster, I would like to bring to your attention a link to the DFO website that describes our scallop buffer zone. Here is how the buffer zone reads as to the conditions for the commercial fishers licence set out by DFO and Enforced by DFO fisheries officers as to the fisheries act and is found as Scallop condition 7: No person shall fish for scallops in that portion of scallop fishing area 24 in those waters adjacent to the Province of Nova Scotia within one [1] nautical mile from the nearest point of land in the counties of Cumberland, Colchester, Pictou, including Pictou Island in the Northumberland Strait, and Antigonish. If Northern pulp worked with DFO more, they would have been shown and explained that their figure in there EA was incorrect and that the scallop buffer zone is one nautical mile from any point of land. This means their outfall is located inside a marine refuge area which is intended to protect the juvenile American lobster. Here are other limitations within scallop buffer zones that are set out by DFO. Prohibitions: - Scallop dragging. - No other human activities that take place in this area are incompatible with the conservation of the ecological components of interest.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Although we recognize modelling necessitates some educated guesswork, the assumptions used in the EA registration document, such as ambient temperatures and time of year, were not in line with when wild Atlantic salmon would likely be present in the impact zone, i.e. during the spring and fall congregation and migration periods. It is clear from the filing documents that there is some misunderstanding by the proponent of the biology and behavior of the species involved. For example, they cite papers noting that Atlantic salmon swim in the upper portion of the water column and suggest there will be a minimal impact because the outlet pipes are on the seafloor. This assumption is incorrect because while migrating Atlantic salmon are indeed pelagic (associated with the water column) as opposed to benthic (associated with the seafloor) the shallowness of the depths involved with the outfall and the impact zone will be well within the zone that would be occupied by salmon, and many other important fish species, migrating and congregating in that geographic area.	Nova Scotia Salmon Association and Atlantic Salmon Federation	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Fish and Fish Habitat	The most concerning deficiency was a lack of information with respect to how the proposed outfall impact zone will overlap with salmon migration routes and salmonid congregation points spatially and temporally at critical life stages. This data gap was not addressed, but is noted by the proponent in their EA filing (Section 8.6.2.4 page 217). Although the effluent coming out of the outlets will meet specifications of federal Pulp and Paper Effluent Regulations, those regulations mandate that the effluent be further diluted within a prescribed distance from the outlet. These dilutions are necessary to ensure the receiving water meets acceptable parameters for biological oxygen demand, chemical oxygen demand, temperature, salinity, etc. in order to ensure aquatic life will not be harmed and ecosystems not disrupted. To fully understand the risks posed by this impact zone it is crucial to understand how the impact zone will overlap spatially and temporally with sensitive species, such as Atlantic Salmon in this area. Without this baseline data it is not possible to predict impacts or monitor and validate actual impacts once the facility is in operation. This severe limitation has been raised with the Provincial Fisheries Minister's staff and the proponent.	Nova Scotia Salmon Association and Atlantic Salmon Federation	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	Discharging 70 to 90 million liters of bleached Kraft pulp effluent daily into the Gulf of St. Lawrence will have a significant negative impact on the fragile and sensitive spawning, nursery and migratory habitat of lobster, herring, mackerel and many other species.	Save Our Seas and Shores Coalition	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	This vulnerable body of water is home to thousands of marine species including lobster, herring, mackerel, snow crab, ground fish, Atlantic salmon, endangered right whale, blue whale, humpback whale, Leatherback turtle and harlequin duck, to name a few. It is considered one of the most precious marine ecosystems on Earth and according to DFO, has sensitive life stages of marine organisms present year around. Because of these shared waters, it can only be legitimately studied in its entirety. This is because water and fish do not recognize provincial boundaries neither does kraft bleached pulp mill effluent which is considered to be one of the most toxic industrial pollutants ever created by humans to enter our marine environment. These toxic effluents have been bio-accumulating and assaulting our oceans and marine species for over half a century.	Save Our Seas and Shores Coalition	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Fish and Fish Habitat	In 2017, Dalhousie released a study on the health of the Gulf of St. Lawrence and noted increasing dead zones as a result of commercial and industrial activity and effluent. The Northumberland Strait connects and empties into to the Gulf of St. Lawrence and the Laurentian Channel within the Gulf. Another study by Brennan, Blanchard and Fennell published in December 2016 discusses the stresses already endured in the Gulf of St. Lawrence and the Scotian Shelf and purports the concept of temperature and oxygen in this area and devastating effect on marine life. The Northumberland Strait therefore is facing threats to the fisheries.	Tourism Industry Association of NS	Thank you for your comment. The receiving water study took into effect the existing conditions of the Northumberland Strait. Information on how the treated effluent will impact the water quality in the Northumberland Strait is discussed in Section 4.2 of the Focus Report.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Mammals, Sea Turtles and Marine Birds	For over 50% (9/17) of the VECs examined in this section, NPNS failed to conduct its own primary research to determine baseline conditions. The following list identifies the VECs for which NPNS did not complete primary studies: a) Freshwater Fish and Fish Habitat; b) Wetlands; c) Flora/Floral Priority Species d) Terrestrial Wildlife/Priority Species; e) Migratory Birds and Priority Bird Species/Habitat f) Harbour Physical Environment, Water Quality and Sediment Quality; g) Marine Fish and Fish Habitat; h) Marine Mammals, Sea Turtles and Marine Birds; and i) Marine Archaeological Resources	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Mammals, Sea Turtles and Marine Birds	the Atlantic Canada Conservation Data Centre (AC CDC) report relied on by NPNS in support of its evaluation of the potential impacts on various species (including birds, terrestrial wildlife, marine mammals, fish, sea turtles, and others) purports to identify the species “known to occur” in the vicinity of the ETF project. <sup>70</sup> However, the majority of the data relied upon by AC CDC is over a decade old – and in some cases dates back over 50 years. <sup>71</sup> It is trite to state that the species residing in any particular area change over time. In the absence of current research, NPNS cannot purport to identify the species that may be affected by its project, much less evaluate the potential impacts on those species.	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Mammals, Sea Turtles and Marine Birds	An ERA is required that considers ecological receptors, including marine mammals such as North Atlantic Right Whales, who may be exposed to chemicals of potential concern from the proposed project	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Mammals, Sea Turtles and Marine Birds	Further studies should be carried out to confirm frequency of marine mammals in the area.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Mammals, Sea Turtles and Marine Birds	More detailed and definitive information on the vessel traffic (including vessel type, size, route, speed, schedules) that will be required to complete Project activities must be provided and considered in the EA, given potential impacts to marine mammals.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Additional details on project vessel traffic and associated mitigative measures will be provided in the Environmental Protection Plan.
Marine Mammals, Sea Turtles and Marine Birds	North Atlantic Right Whales. Considering there is at least one reported sighting in the Northumberland Strait, it should be noted that there is an increased risk of injury or mortality from vessel strikes or entanglement from the project.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Mammals, Sea Turtles and Marine Birds	NPNS must provide more detailed information on visual surveying methods and consider completing these in combination with other marine mammal monitoring methods such as the deployment of passive acoustic monitors or aerial (helicopter or drone) surveys	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Mammals, Sea Turtles and Marine Birds	NPNS must provide more information on Marine Mammals Observer (MMO) monitoring requirements, including information on reporting intervals, accessibility of reports to stakeholders, and whether reporting will trigger any adaptive management measures	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Additional details on Marine Mammal Observation protocols will be provided in the Environmental Protection Plan.
Marine Mammals, Sea Turtles and Marine Birds	NPNS should consider requiring marine mammal monitoring during all project activities that require vessel travel.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Additional details on Marine Mammal Observation protocols will be provided in the Environmental Protection Plan.
Marine Mammals, Sea Turtles and Marine Birds	NPNS should ensure that observers are present on all Project vessels to identify the presence and location of marine mammals and to ensure appropriate mitigation measures outlined in EA Section 8.13.3.2 are adequately triggered and implemented.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Additional details on Marine Mammal Observation protocols will be provided in the Environmental Protection Plan (EPP). The EPP will be provided to NSE prior to construction.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Mammals, Sea Turtles and Marine Birds	The assessment of project effects on the marine mammals, sea turtles, and marine birds VEC (Section 8.13) is considered to be incomplete and underscores the need for NPNS to conduct field studies for this project, especially given growing uncertainty regarding the distribution of North Atlantic Right Whales in their summer foraging range.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Mammals, Sea Turtles and Marine Birds	I have been active working with a number of groups over the past few years on the critical environmental problems surrounding offshore drilling including its dire effect on marine mammals, the risks to our seafood and tourism industries, and above all the industry-captive nature of our offshore regulatory regime, notably the CNSOPB. What does this have to do with Northern Pulp's proposed Effluent Treatment Facility? Everything. The problems and effects are the same.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways). Section 2 of the focus characterizes the current untreated and untreated effluent, and presents the results of Bench Test results for the new treated effluent. Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Marine Mammals, Sea Turtles and Marine Birds	Later in the report on page 570, section 12.3.9.1 it states "it is anticipated that potential residual environmental effects of the project on marine mammals, sea turtles and marine birds may occur during the construction and installation of the pipeline, and during pipeline operation and maintenance activities." This is very concerning.	Individual Public Comment	Refer to section 8.4 for comments concerning the herptile survey for the re-aligned pipeline route.
Marine Mammals, Sea Turtles and Marine Birds	Later in the report on page 570, section 12.3.9.1 it states "it is anticipated that potential residual environmental effects of the project on marine mammals, sea turtles and marine birds may occur during the construction and installation of the pipeline, and during pipeline operation and maintenance activities." This is very concerning.	Individual Public Comment	Refer to section 8.3 for comments concerning the bird baseline survey for the re-aligned pipeline route.
Marine Mammals, Sea Turtles and Marine Birds	My first concern is for marine mammals and turtles. I have personally seen a Fin Whale and Harbour Porpoises and see that they are listed in the table under the category of special concern.	Individual Public Comment	Refer to section 8.4 for comments concerning the herptile survey for the re-aligned pipeline route.
Marine Mammals, Sea Turtles and Marine Birds	Potential and known adverse effects including identifying species at risk and concern for their habitat: There are known species at risk at the locals of this pipe proposal. The piping plover and wood turtle are known species in the area of the Caribou provincial park, only kilometers away from the proposed pipe location.	Individual Public Comment	Refer to section 8.4 for comments concerning the herptile survey for the re-aligned pipeline route.
Marine Mammals, Sea Turtles and Marine Birds	Potential and known adverse effects including identifying species at risk and concern for their habitat: There are known species at risk at the locals of this pipe proposal. The piping plover and wood turtle are known species in the area of the Caribou provincial park, only kilometers away from the proposed pipe location.	Individual Public Comment	Refer to section 8.3 for comments concerning the bird baseline survey for the re-aligned pipeline route.
Marine Mammals, Sea Turtles and Marine Birds	Should any of the sensitive aquatic organism, marine mammals, birds, fish be adversely impacted, would the repercussion on Nova Scotia's fishing industry be at all similar as to when Alberta discovered in 2003 one black Angus cow to have bovine spongiform encephalopathy (mad cow disease) which caused the United States to immediately close its borders to Canadian beef and cattle which in turn caused about another 40 countries to follow suit?	Individual Public Comment	Refer to section 8.3 for comments concerning the bird baseline survey for the re-aligned pipeline route.
Marine Mammals, Sea Turtles and Marine Birds	The proposed discharge location is directly adjacent to Caribou-Munroes Island Park a bird and wildlife sanctuary.	Individual Public Comment	Refer to section 8.3 for comments concerning the bird baseline survey for the re-aligned pipeline route.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Marine Mammals, Sea Turtles and Marine Birds	The report indicates that the assessments listed below are not yet completed: • Avian / turtle follow-up field studies, • MEKS field surveys, • Vegetation, wetland and watercourse follow-up field studies, • Marine seismic, geotechnical and habitat surveys. The potential environmental impacts of the proposed project cannot be fully assessed with this work not yet completed, in particular the marine habitat surveys. NSE should require these assessments be completed prior to granting approval.	Individual Public Comment	Refer to section 8.4 for comments concerning the herptile survey for the re-aligned pipeline route.
Migratory Birds and Priority Species/Habitat	For over 50% (9/17) of the VECs examined in this section, NPNS failed to conduct its own primary research to determine baseline conditions. The following list identifies the VECs for which NPNS did not complete primary studies: a) Freshwater Fish and Fish Habitat; b) Wetlands; c) Flora/Floral Priority Species d) Terrestrial Wildlife/Priority Species; e) Migratory Birds and Priority Bird Species/Habitat f) Harbour Physical Environment, Water Quality and Sediment Quality; g) Marine Fish and Fish Habitat; h) Marine Mammals, Sea Turtles and Marine Birds; and i) Marine Archaeological Resources	EcoJustice and Friends of the Northumberland Strait	Additional baseline surveys were completed in 2019 and the results of those surveys are provided in the Focus Report.
Migratory Birds and Priority Species/Habitat	the Atlantic Canada Conservation Data Centre (AC CDC) report relied on by NPNS in support of its evaluation of the potential impacts on various species (including birds, terrestrial wildlife, marine mammals, fish, sea turtles, and others) purports to identify the species "known to occur" in the vicinity of the ETF project. <sup>70</sup> However, the majority of the data relied upon by AC CDC is over a decade old – and in some cases dates back over 50 years. <sup>71</sup> It is trite to state that the species residing in any particular area change over time. In the absence of current research, NPNS cannot purport to identify the species that may be affected by its project, much less evaluate the potential impacts on those species.	EcoJustice and Friends of the Northumberland Strait	Historical occurrences documented in CDC records provide some information about species that are known to occur in an area and are not interpreted to indicate that they currently occur there, or that other species do not occur in an area. Additional baseline surveys were completed in 2019 and the results of those surveys are provided in the Focus Report.
Migratory Birds and Priority Species/Habitat	I would also like to see specific studies regarding the potential intrusion and accumulation of effluent-borne contaminants affecting the water quality in Caribou Harbour, Caribou Rivers and other nearby tributaries. Given my experiences within these waterways, I can attest to the significant incoming tidal currents passing the proposed outfall boundary, pushing water into Caribou Harbour many kilometers upriver of Big and Little Caribou River and into various lagoons and saltwater marshes. I worry that the constant ebb and flow in this area could lead to long term accumulation of pollutants, which could be detrimental to the health of these sensitive and important ecological areas that are home to a diverse range of aquatic and avian life.	Individual Public Comment	Additional information on the effluent dispersion and its potential effects to the surrounding environment are provided in the Focus Report, particularly in Section 2.0.
Migratory Birds and Priority Species/Habitat	It would be a good idea to do some quick nest surveys for those barn swallows, as their nests might be in existing structures near the ETF footprint. If that is the case, the construction phase should avoid conducting work during the nesting season, to avoid displacing the birds or interrupting their foraging patterns through excess noise and emissions.	Individual Public Comment	Breeding bird surveys were undertaken at the ETF property in 2018. NPNS has committed to meeting the requirements under the Migratory Birds Convention Act including avoiding clearing during the nesting season or as advised by regulatory authorities.
Migratory Birds and Priority Species/Habitat	On page 51 (Section 5.3.1.3 Paragraph 4) they refer to paying attention to bird migrations and nesting. Having seen and read of their clearcutting in Nova Scotia, I know they don't pay any attention to these issues. I can only conclude from these statements that they are lying.	Individual Public Comment	Additional baseline surveys were completed in 2019 and the results of those surveys are provided in the Focus Report. Specifically, Section 8.2 addresses migratory birds.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Migratory Birds and Priority Species/Habitat	One of the first issue with the pipe route has to do with migratory birds. In the EA submission, it says that there is non significant effects on migratory birds yet from late April until early October, cormorants make the side of the Causeway their home. There is nothing in the EA that addresses this. Any construction of a pipeline would damage where they live and do them significant harm. This shows just one of the many potential omissions with relying on desktop studies instead of doing the actual work.	Individual Public Comment	Additional baseline surveys were completed in 2019 and the results of those surveys are provided in the Focus Report. Also refer to the Environmental Planning and Mitigation Measures document prepared as submission Appendix A2.1-2.
Migratory Birds and Priority Species/Habitat	Other points that are of concern to us from the Northern Pulp proposal are as follows: The waste proposal poses major risk to harming marine life, marine habitat, species at risk/endangered/threatened that include migratory and marine birds, fish, vegetation, reptiles etc.	Individual Public Comment	The potential effects of the project to the environmental components listed were evaluated in the registration document, and are further evaluated in various sections of the Focus Report.
Migratory Birds and Priority Species/Habitat	Should any of the sensitive aquatic organism, marine mammals, birds, fish be adversely impacted, would the repercussion on Nova Scotia's fishing industry be at all similar as to when Alberta discovered in 2003 one black Angus cow to have bovine spongiform encephalopathy (mad cow disease) which caused the United States to immediately close its borders to Canadian beef and cattle which in turn caused about another 40 countries to follow suit?	Individual Public Comment	No, as Mad Cow Disease (spongiform encephalopathy) is a transmittable disease that can affect other cows as well as be transferred to humans.
Migratory Birds and Priority Species/Habitat	The location of the proposed undertaking and the nature and sensitivity of the surrounding area: Having grown up in Pictou and New Glasgow, I have worked on the water and lived in this surrounding land area. I am unsure how a pipe would be able to bypass a colony of protected birds which are found near the Pictou Causeway, Munro's Island, Caribou Provincial Park, and Water Side Provincial Park. This area is known to be a habitat for species at risk, and I would like to be informed with how this pipe would not alter life of various marine and land species. These migratory and salt water habitat birds that are on the species at risk, listed as threatened, endangered within the footprint of the pipe proposal.	Individual Public Comment	Information about the various species of wildlife, including priority species such as species at risk, and the potential effects of the project are provided in the registration report and the Focus Report.
Migratory Birds and Priority Species/Habitat	The location of the proposed undertaking and the nature and sensitivity of the surrounding area: Having grown up in Pictou and New Glasgow, I have worked on the water and lived in this surrounding land area. I am unsure how a pipe would be able to bypass a colony of protected birds which are found near the Pictou Causeway, Munro's Island, Caribou Provincial Park, and Water Side Provincial Park. This area is known to be a habitat for species at risk, and I would like to be informed with how this pipe would not alter life of various marine and land species. These migratory and salt water habitat birds that are on the species at risk, listed as threatened, endangered within the footprint of the pipe proposal.	Individual Public Comment	Information about the various species of wildlife, including priority species such as species at risk, and the potential effects of the project are provided in the registration report and the Focus Report.
Migratory Birds and Priority Species/Habitat	The potential effects on species at risk has been ignored, the proposed site of the pipe goes through a rock crab nursery which feed the lobsters; there is a herring spawning bed in close proximity to the site of the pipe; not to mention other protected species such as piping plover, hawks and eagles. How will these protected species be affected by not just the effluent, but the construction of this pipe?	Individual Public Comment	An environmental planning and mitigation measures document has been prepared to address mitigation for sensitive species and other environmental concerns. Additional surveys were completed, and the pipeline has also been re-aligned. Details are provided in the Focus Report.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Migratory Birds and Priority Species/Habitat	The proposal claims that "the loss of vegetation and associated bird habitat within the pipeline footprint area along the road shoulder (if it occurs) will be consistent with existing road maintenance activities along Highway 106 and thus, will not result in any additional loss of bird habitat." (see page 561). This statement fails to consider the habitat of the double breasted and great cormorant which are located along the Harvey A. Veniot Causeway. Their habitat will be destroyed with the construction of the pipeline, and will not likely recover.	Individual Public Comment	Additional baseline surveys were completed in 2019 and the results of those surveys are provided in the Focus Report. Also refer to the Environmental Planning and Mitigation Measures document prepared as submission Appendix A2.1-2.
Migratory Birds and Priority Species/Habitat	The water pollution affecting fish and wildlife habitat, especially migrating birds such as heron and small shore birds and the seal population living close to Caribou Island and Pictou Island a good deal of the year is vast.	Individual Public Comment	Additional information regarding the potential effects to fish, wildlife and vegetation are provided in the Focus Report.
Migratory Birds and Priority Species/Habitat	They say Non Significant effect on Migratory Birds. Yet within 1500 ft of leaving Northern Pulp Property the route of the Pipe will attempt to pass through a large nesting colony of Cormorants, which in Nova Scotia is a protected species.	Individual Public Comment	The pipeline was realigned and additional wildlife surveys were conducted. This information is found in Section 2.1 and 8.2 of the Focus Report.
Not included in VEC	It is particularly important to note once more that NPNS has not conducted baseline studies for over half of the environmental components that it purports to evaluate.	EcoJustice and Friends of the Northumberland Strait	move action to comment
Not included in VEC	Missing Studies - Baseline data and cumulative effects of the project on the larger Northumberland Strait, taking into account other discharges and activities already affecting the Strait as a whole.	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.
Not included in VEC	The application is based on inadequate and second-hand and often outdated research and investigation, and relies on inappropriate methodology to make defective predictions. No significant effort was expended to measure and determine the actual conditions in the affected ecosystems. NPNS does not understand the environment in which it seeks to operate, it understates the risks of the project, and overstates the effectiveness of its proposed mitigation measures.	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Not included in VEC	The conclusion fails to take proper account of the nature of pulp mill effluent, the gaps in the information presented by NPNS, and the sensitive environments into which it may be discharged.	EcoJustice and Friends of the Northumberland Strait	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' future raw wastewater, modeling results and laboratory trials.
Not included in VEC	The EA submission, although lengthy, lacks critical information, or sufficient detail, in crucial areas such as: (l) Clear, effective and comprehensive mitigation plans, with substance and that take into account actual conditions in the local environment.	EcoJustice and Friends of the Northumberland Strait	Additional information requested by NSE (on review of public comments) is provided in the Focus Report.
Not included in VEC	The NPNS ETF is ill-conceived and is designed to externalize to the environment the costs of NPNS's enterprise. NPNS rejects the significant and viable alternative of installing a closed loop system on the basis that it cannot make the same level of profits as it does with its current process.	EcoJustice and Friends of the Northumberland Strait	Addressed in EARD.
Not included in VEC	In Table E.1.1-1: Summary of the Significance of Project-Related Residual Environmental Effects Predicted. Every row and column of the table contains 'NS' which represents 'No Significant Residual Environmental Effects Predicted', including water quality, fish and fish habitat, surface and groundwater and the entire 'Accidents, Malfunctions and Unplanned Events' column. It is inconceivable that after NPNS's lengthy history of leaks, ruptures, over-limit emissions and other unplanned events that these predictions could be put forward credibly in a registration document for environmental assessment of this proposed effluent treatment facility.	Ecology Action Centre	Refer to section 5.1 for comments concerning wetland baseline surveys and effects to wetlands.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Not included in VEC	NPNS fails to provide a plan for its effluent for the time between February 1, 2020 and the commencement of the new ETF.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	The environmental assessment addresses the replacement effluent treatment facility.
Not included in VEC	6.3.2 - Engagement Sessions: The public consultations that I attended did not have any information in regards to an outfall in the Caribou wharf region. All discussions and diagrams we were presented had the outfall in the Pictou harbour region. The Caribou wharf area is the 3rd highest entry point for Nova Scotia. It is an entry point for 475,000+ visitors to Nova Scotia annually on the ferry service between Caribou / Wood Island. I would have presented a much different scenarios of questions to the public sessions if this location would have been identified. Although it is the same approximate distance from our public beach, the potential impact on tourism to Nova Scotia would be 10 fold if there were discoloration, odour, or any other visible issues at this new outfall point. What is perceived as a nuisance could have real socio-economic impact. An environmental assessment report and new public consultations need to happen before construction can begin on the new treatment plant.	Individual Public Comment	Refer to section 9.1 for comments concerning baseline studies for fish and shellfish tissue of key marine species in the vicinity of the pipeline diffuser location (HHRA).
Not included in VEC	According to CLC meeting minutes from Spring 2017, Northern Pulp required both the Boat Harbour ETF and the New ETF to run concurrently for six months while the biology developed in the AST system (B). According to page 81 of the EA, the commissioning phase would take between one and three months. This is concerning because it sounds like the timeline is being rushed to compensate for money that could be lost should the appropriate time be taken for the biology to develop	Individual Public Comment	The plan to commission the new system will be developed in consultation with ECCC and NSE.
Not included in VEC	Are Canso Chemicals, it's current or previous owners protected by the Indemnity Agreement? Are people who are connected to Canso Chemicals that are also connected to the mill held free of harm should any wrongdoing be uncovered that relates to their connection to Canso Chemicals?	Individual Public Comment	Identification of indemnity is beyond the scope of an environmental assessment.
Not included in VEC	As far as decommissioning of this pipe , the plan, if it can be called such, is to leave everything in the ground or under the water and to merely cap it off after it has been cleared of the effluent in it. Hey, no problems here, just let mother nature and the future taxpayers deal with it.	Individual Public Comment	Your concerns are noted. This is a common practice and is often less disruptive than removing the infrastructure.
Not included in VEC	Basin Head on the eastern end of PEI is a federal Marine Protected Area (MPA). It is highly plausible to expect large volumes of industrial contaminants, with COPC characteristics, released daily from adjacent NS shorelines will affect the unique ecosystem of that MPA.	Individual Public Comment	The receiving water study (Section 4.2) indicates predicted changes to water quality to be limited to well within 100 m of the outfall. Basin Head is located over 75 km from the outfall. Impacts are not predicted at Basin Head.
Not included in VEC	Concern: Climate change. Oceans are already stressed by climate change. Scientists warn that the Gulf of St. Lawrence is warming more rapidly than almost anywhere on Earth. Adding additional stressors to a system that is already stressed is not wise. The Northumberland Strait is an area that requires additional protection, not additional degradation.	Individual Public Comment	Climate change is considered with respect to the project (Focus Report Addendum Item 3).

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Not included in VEC	Concern: Lack of community consultation, inadequate time for meaningful community response. The community was not consulted on the actual project submitted by Northern Pulp for environmental assessment. Any public consultation was on a somewhat similar ETF proposal discharging into a completely different location. In addition, a 30-day period for public consultation on 2000 pages of previously undisclosed information does not fulfill requirements for meaningful public review and input.	Individual Public Comment	Information was provided to the public as the project progressed. The public review period for the environmental assessment registration document and for the Focus Report are established by NSE.
Not included in VEC	Concerning is the combination of lax regulations, lack of monitoring and weak enforcement and penalties that was cited by the auditor general (16) not only in general in this province but how that applies to Northern Pulp. During the installation of the precipitator, NP was allowed to keep operating because it was "working towards compliance". That took a few years. That is not acceptable. When talking about an effluent pipe that could put the ecology of the Northumberland Strait and its corollary fishing industry at risk, allowing a mistake to continue for years while working towards compliance is not an acceptable option. If there is a malfunction that is noticed, what steps are going to be taken to properly empty the 15km pipe before its contents are pumped out into the Northumberland Strait?	Individual Public Comment	Refer to section 3.4 for comments concerning the size and function of the treatment system spill basin.
Not included in VEC	I also question why Northern Pulp who continue to state that there are dozens of Bleach Kraft Mills in Northern America, that they would chose a Toxicology Report done for a Paper Mill in Bell Bay, Tasmania that was never even built ? So why not a Toxicology report from one of the dozens in operation here in North America? Is there no way at all this effluent that is discharged daily - can it not be recycled - for	Individual Public Comment	The available relevant toxicological data was reviewed. It is noted that site specific toxicological data will be part of Environmental Effects Monitoring required for the actual outfall.
Not included in VEC	the lack of a better phrase - is it possible for the plant to filter, recycle etc. this effluent and reuse it themselves. Has this option been scrutinized at all?	Individual Public Comment	Addressed in EARD.
Not included in VEC	It concerns me that our federal regulations have not been updated in over 20 years.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Not included in VEC	Let me start by saying that I find it unfathomable that Dillon Consultings' 'executive summary' of the Environmental Assessment report developed on behalf of Northern Pulp, indicates that not one single item within the submission would have any significant 'Residual Environmental Effect Predicted'. Not one out of 18 areas affected (including marine habitat, ground water, wildlife, plant life...etc) will have any residual effect; including no effect during construction, no effect during ongoing operation, no effect during ongoing maintenance, no effect during accidents, no affect during malfunctions, no affect during unplanned events! How can this even be possible?	Individual Public Comment	Potential effects are identified for each VEC. The significance of residual effects is determined based on the criteria identified in the effect assessment. No significant adverse effects were identified.
Not included in VEC	My first concern, which is a general one, is that the size of this document alone would warrant much more scrutiny than a Class 1 assessment would give it. The contents of this document are extremely complex and would affect the environment around Pictou the environment in Caribou, and the waters of the Northumberland Strait, which assuredly impacts all of Atlantic Canada's provinces. It is too long to read through and say that it is a simple project in any way.	Individual Public Comment	Addressed in EARD.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Not included in VEC	Now my final point that I'm going to mention and touch on is an in Plant issue that deals with there drainage and cleaning of their systems like the digester, pumps, and their pipelines within the plant that are full of green liquor, brown liquor, white liquor , black liquor and any other chemical substances that are used in the pulp making process. During shutdown periods, these substances get flushed with acid for cleaning purposes. During these shutdowns or during emergency breakdowns within the plant, at any given time, these substances are flushed down a drain and out into Boat Harbour. Any process interruption is drained off and sent down a drain out into Boat Harbour as well.	Individual Public Comment	Refer to section 3.6 for comments concerning potential releases of waste dangerous goods at the project site and where they will be directed for treatment.
Not included in VEC	NP states that neither the Fishermen nor the PLFN offered any input to the outflow location evaluation other than expressed opposition. This seems to try to discount their opposition to a pipe going into the Northumberland Strait as the Fishers and the PLFN not helping with the decision. At the open houses, NP was told by the fishers and PLFN that the water was too shallow and there would be ice scouring. The prevalence of ice at the Caribou Harbour location would not be much different. Either way, a plan that would put their fishing livelihood at risk was not going to be acceptable. The fishers' associations even offered to help cost share any project that didn't involve putting a pipe into the Northumberland Strait. Basically, this amounted to the fishers and PLFN evaluating the plan based on their vast knowledge of the Northumberland Strait as a bad idea and Northern Pulp disagreed based on their wanting to put a pipe in the Strait.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Not included in VEC	Public consultation was for the Pictou Harbour site proposal not the current Northumberland Strait proposal.	Individual Public Comment	As part of the environmental assessment process public input will be solicited by NSE on the Focus Report.
Not included in VEC	says that Northern Pulp will be in charge of monitoring effluent quality discharged to the receiving environment. They are supposed to be in charge of that now and that has lead to two large raw effluent leaks in less than five years. I believe they've demonstrated an inability to complete these tasks.	Individual Public Comment	Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
Not included in VEC	The characteristics of the proposed effluent is "unknown" to NP	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Not included in VEC	The document submitted by Northern Pulp is 1700 pages long and the public has been given 30 days to respond to this lengthy and technical detail report. A lot of this report is above the average person's understanding but still was good to be available to the public although many feel there are some things left out and one concern is the mercury content.	Individual Public Comment	Thank you for your comment, the effects of specific chemicals were examined in Section 7.3, Section 9.1, and Section 9.2 of the Focus Report.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Not included in VEC	The documents seem to tell me that the intention is to keep the Mill operating as a bleached kraft pulp mill. This is my greatest concern. The appetite for wood has resulted in the depletion of supply within a 200 km radius. The process itself requires about 2 cords of wood to make a ton of pulp. Having been around when the Scott mill was built and seen the forests of the day, I am appalled with what has grown since the first clear cuts were made for supply. Too much fir has come back and it is now reaching the end of its life cycle without becoming really useful because it has never been thinned to allow it to grow. Dead fir does not make good pulp. Maybe right now with the dollar at a 25% premium for sales trucking long distances makes sense but if the dollar is par, things will be different even with lumber that is cut in trying to get chips from the slabs. Maybe if the pulp were made into paper on site, then the added value would justify the new treatment but the present system is doubtful.	Individual Public Comment	It is correct that the mill is intending to operate as a bleached kraft mill.
Not included in VEC	The proposal also lists temporary and permanent closures for fishermen around the outflow area and to create a no anchor zone.	Individual Public Comment	Potential impacts to key Marine Fisheries are addressed in Section 7.3.
Not included in VEC	There is no specific discussion or assessment of the potential impacts of climate change in the Registration document.	Individual Public Comment	Effects of Climate change are considered in Item 3 of the addendum to the Focus Report
Not included in VEC	They also list temporary and permanent closures for fishermen around the outflow area, creating a no anchor zone and possible compensation (that has not been discussed) for impacted fishers.	Individual Public Comment	Potential impacts to key Marine Fisheries are addressed in Section 7.3.
Not included in VEC	This statement from the submitted Environmental Assessment Registration Document clearly signifies why: At this time, effluent chemistry characteristics including the specific substances present in treated effluent and their anticipated concentrations will not be known with certainty until the project is operational. -Certainty regarding these facts and ALL specifics must be available at this crucial proposal stage. There is simply no way to trust the science and make the correct recommendation without having this all-important information accurately presented at this highly consequential phase.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Socio-Economic Environment	There is no evidence indicating that the Northumberland Strait or even the Gulf of St. Lawrence can absorb the massive amount of toxic effluent which the Northern Pulp effluent project intends to pump into our fishing and lobster grounds.	Clean Ocean Action Committee	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Socio-Economic Environment	Caribou Harbour is home to the largest commercial fishing fleet in the Northumberland Strait. The strong lobster catches in this area are the result of the continuous food supply from the rock crab nursery. The potential destruction of this crab habitat will have devastating consequences on the lobster industry in this area.	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Socio-Economic Environment	NPNS had only made a small portion of its specialist studies available to the public. Specifically, of the 18 Appendices included with its EA materials, NPNS only made two full appendices and three partial appendices available on its website prior to registration	EcoJustice and Friends of the Northumberland Strait	Refer to section 1.2 for the plan to share future reports relevant to this Project with the public and the Mi'kmaq such as PLFN.
Socio-Economic Environment	NPNS's failure to do (post completed studies on its website for public review) so has unquestionably undermined the public's ability to review, understand, and provide thoughtful and fulsome comments on the EA materials.	EcoJustice and Friends of the Northumberland Strait	Refer to section 1.2 for the plan to share future reports relevant to this Project with the public and the Mi'kmaq such as PLFN.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Socio-Economic Environment	The project proposes to discharge a daily average of 62,000,000 litres, and up to a maximum of 85,000,000 litres, of pulp mill effluent every day into the middle of the only herring spawning area in the southern Gulf of St. Lawrence. It will discharge effluent directly into lobster fishing grounds for as many as 82 local fishers, and could affect the lobster fishery for as many as 1800 lobster fishers from Nova Scotia and Prince Edward Island in the Strait.	EcoJustice and Friends of the Northumberland Strait	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Socio-Economic Environment	there were no public meetings held between the time the new route was selected and the date on which the EA materials were submitted to the Province. <sup>34</sup> A public information session has therefore never been held with respect to the new Caribou route and the CH-B outfall.	EcoJustice and Friends of the Northumberland Strait	This was not identified as a requirement for the Focus Report.
Socio-Economic Environment	Despite NPNS's claim that the project proposal's impact on marine life will not be significant, the company's Receiving Waters Study, prepared by Stantec in August of 2017, states, "Among the four potential outfall locations ... the [chosen] outfall location provides the smallest potential long-term cumulative effects on the fishery and socio-economic environments, and therefore is considered the better outfall location for the discharge of the treated wastewater from the mill." (Conclusion 2.4) Here we see suggestion that NPNS is well aware that the fishery will be adversely impacted in the long term, despite public claims to the contrary. The potential impacts to fish, bivalves, crustaceans, fish habitat and critical spawning areas are outlined above. While the deleterious short term impacts of NPNS's proposed effluent treatment facility on fisheries may be limited to a relatively small area, the long-term effects could still be significant. The Lobster Fishing Area 26A, stretching east-west from Pugwash to Port Hastings and north of Souris, PEI, supports more than 700 licenses at 300 traps per license. This is a marine area worth upwards of \$40 million on fisheries alone. The Northumberland Fishermen's Association notes in a position letter that the Strait is one of the "most lucrative habitat and spawning grounds for lobster, crab, scallop, herring, mackerel and groundfish" in the Gulf. Each haul is significant to the fishermen that live and work there and, as such, the long term effects on the larger fishery should be more carefully considered.	Ecology Action Centre	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Socio-Economic Environment	Even the idea of seafood produced in polluted waters could be enough to shut down or seriously curtail demand in sensitive markets like China. This is a serious financial risk that Nova Scotia cannot afford to take.	Ecology Action Centre	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Socio-Economic Environment	Tourism operators have reported the length of stay in the Town of Pictou has declined from 2010, an average of 3.3 days to 2017 at 2.5 days. Tourism Operators explain the decline in visitor stays is a direct result of the air and water pollution emanating from the NPNS mill. Allowing the mill to release its effluent into the Northumberland Strait and to increase its harmful air emissions by burning quantities of sludge will only make things worse for this industry. Tourism operators in western Cape Breton (Inverness County), along the south coast of PEI and the New Brunswick coastline of the Northumberland Strait are all at risk of impacts from the proposed discharge of large volumes of effluent into the marine environment.	Ecology Action Centre	Refer to section 6.2 for comments concerning air dispersion modelling.
Socio-Economic Environment	With the proposed level of effluent expected to be released into the Strait under NPNS's new plan, we may risk a future in which continued inputs render the local area entirely unusable for shellfish aquaculture or shellfish harvest altogether.	Ecology Action Centre	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Socio-Economic Environment	A description of human and ecological health pathways, project interactions and effect mechanisms within the socio-economic effects assessment including a human health risk assessment (i.e., drinking water within the LAA's wells; recreational water usage; Indigenous community members' land uses, water and wild foods consumption).	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways)
Socio-Economic Environment	A discussion and demonstrated planning for health and safety considerations of the surrounding communities as related to construction, should there be a temporary, non-resident workforce hired for construction. Include whether the construction workforce will be housed in surrounding local communities and/or within temporary workcamps. How many workers are anticipated to be hired for the construction phase?	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Not addressed in the focus report. The details surrounding construction will be determined once approvals have been granted for the Project.
Socio-Economic Environment	Apply an actual ecosystem and integrated approach for the effects assessment that considers VEC interdependencies and an economic risk analysis to other economic sectors in the region – fisheries in particular.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Socio-Economic Environment	Describe how individuals within the lobster fishery (and other fisheries) will be compensated or accommodated for losses as a result of the Project's construction and/or operations activities. An explicit acknowledgement of the adverse economic impacts (and in turn social impacts on regional and community wellbeing and health) for fishers when even just a few days of fishing are interrupted is critical for a balanced effects assessment.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	An engagement plan has been developed to provide information on scheduling of construction and operational activities (See Section 1.2). Additional requirements will be determined based on discussions with regulatory authorities.
Socio-Economic Environment	Discussion and analysis of risks and in turn, potential adverse social impacts to individuals and families who rely on uninterrupted or undisturbed access to the fisheries; including mitigations for avoiding this adverse impact	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	An engagement plan has been developed to provide information on scheduling of construction and operational activities. Additional requirements will be determined based on discussions with regulatory authorities.
Socio-Economic Environment	Identification of positive socio-economic effects from employment during the 21-month construction period as well as operations and maintenance.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	It is anticipated that employment will occur as a result of construction activities. Details of employment requirements will be clarified once design is finalized.
Socio-Economic Environment	NPNS must include VEC, and more importantly, a robust and consistent effects assessment on indicators related on the acknowledged VEC "health of communities" to capture missing elements of health and wellbeing, including the protection of a resilient fishery and associated economies including harvesting and processing plants; employment, analysis of economic risks and/or benefits at community, regional and provincial level; description for, and management plans for anticipated workforce at both construction and operation phases.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways). Section 2 of the focus characterizes the current untreated and untreated effluent, and presents the results of Bench Test results for the new treated effluent. Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Socio-Economic Environment	NPNS must provide a balanced and accurate description of the existing regional socioeconomic context, including regional health and wellbeing dependencies on the fish harvesting and fish processing sectors. Using complete baseline information, an economic effects assessment is required that carries forward information referred to within the baseline section including: project effect mechanisms and interactions with existing fisheries economic sector, at a granular level i.e., net losses anticipated due to forecasted days of interruptions due to construction and operations); human health effect mechanisms and interactions with economic risks related to fish processing plant operation requirements and interactions with effluent discharges; project workforce requirements; wages and salaries, and supply chain procurement needs during both construction and operations.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	An overview of socio economic considerations was provided in the EARD.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Socio-Economic Environment	NPNS must provide discussion and analysis of potential effects to the health and integrity of the region's commercial fisheries based on results of more comprehensive effluent modelling, data upgrades and effects analysis as per the results of this EA's technical review of these interdependent VECs	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Socio-Economic Environment	NPNS must provide more fulsome consideration, description and commitment for specific mitigation, management and monitoring measure to address both the ecological and social factors related to the Project's activities at construction and operations as listed in previous comments.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Section A0 provides an environmental management commitment summary - this will include follow-up mitigation and monitoring plans.
Socio-Economic Environment	NPNS's proposal to test effluent toxicity sometime within 24 months after NPNS starts pumping effluent into the Northumberland Strait presents too high of an unmitigable risk to marine life and the fishing industry.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Effluent will be tested as required under PPER.
Socio-Economic Environment	Provide a detailed description of the region's economic reliance on commercial fisheries, including individual harvester economic baselines and dependencies as they relate to fishing	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	The assessment addresses environmental effects.
Socio-Economic Environment	Provide analysis of the Project's construction and operation phase effect mechanisms and interactions with harvesters' ability to fish (in terms of access); as well as potential risks to fishing economy due to risks to species' habitat, spawning area integrity and health	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Effects on marine fish are identified in Section 7.3.
Socio-Economic Environment	Provide information on the pipeline's lifecycle length and anticipated activities for its decommissioning (i.e., expansion, upgrades, replacement etc.)	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Preliminary information on decommissioning is proved in the Project Overview.
Socio-Economic Environment	Provide more baseline information describing the specific aspects of the tourism sector within the LAA that have inter-connections with water – either from recreational usage or from drinking and/or other water uses. These details would be relevant within an ecosystem approach to the socioeconomic impact assessment.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	The EARD acknowledged the importance of tourism.
Socio-Economic Environment	Section 6.5 of Northern Pulp's proposal suggests that fishermen have offered "no input to the outfall location". The Authority has been advised by its fisherman patrons that this is a false statement and the Northern Pulp's representatives were informed the entire area outlined and presented to the fishermen of Caribou Harbour, including the pipe route and outfall, is fished at one point or another throughout the year.	Harbour Authority of Caribou	Thank you for the information. Section 7.3 of the Focus Report looks at the impacts of treated effluent on representative key marine specific that are important for fisheries. The receiving water study (Section 4.2) identified predicted water quality by the edge of the mixing zone meets water quality objectives and/or background. Based on the data provided in the Focus Report impact to fish and fish habitat is not predicted. Disruption of fisheries within the area of the pipe construction will be minimized to the extent possible.
Socio-Economic Environment	The Authority is very concerned that its patrons will have their navigational abilities under Navigational Protection Act restricted. As previously noted here in the patrons of the Authority, in particular seventy (70) plus commercial fishermen, navigate directly across the path of the proposed pipe route in Caribou Harbour, on a daily basis, during regular fishing seasons of lobster, crab, herring and callop seasons spanning April through November.	Harbour Authority of Caribou	Impact to navigation is not anticipated. A Navigational waters review will be required before construction begins, at this time adjustments will be made as necessary.
Socio-Economic Environment	9. What is the modelled overlap of the effluent plume with commercially harvested shellfish banks? I assume that being directly downstream of the diffuser may reduce commercial value of shellfish attractiveness to consumers.	Individual Public Comment	Refer to section 9.1 for comments concerning baseline studies for fish and shellfish tissue of key marine species in the vicinity of the pipeline diffuser location (HHRA).



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Socio-Economic Environment	All along the coast there are a number of beaches that residents and tourist visit and enjoy. Just down the shore from the Caribou wharf, where the purposed pipe will be, there is a Provincial Park where there is also a campground. Last summer they had the most campers they ever had and they come there from all over and the beach is a big draw. If the effluent pipe is there no one would want to swim or even be on the beach which would be a terribly loss for the area.	Individual Public Comment	Addressed in EARD.
Socio-Economic Environment	Allowing them to pour their pollution directly onto one of Nova Scotia's richest shellfishing areas would be pure insanity. Even the suggestion that this might be done would be enough to kill our overseas markets. Can you imagine what the EU would do with lobster shipped to Europe from a province with so little environmental awareness? Our competitors in the US would have a field day with this	Individual Public Comment	Refer to section 9.1 for comments concerning baseline studies for fish and shellfish tissue of key marine species in the vicinity of the pipeline diffuser location (HHRA).
Socio-Economic Environment	Another area that is inadequately addressed is the potential effect on tourism in the area.	Individual Public Comment	Addressed in EARD.
Socio-Economic Environment	Besides the \$2 Billion dollar Commercial Fishery in NS, The Northumberland Strait also employs a lot of people in Tourism. There are 3200 jobs in this industry along the Strait that generates \$200 Million in revenue and brings in about \$24 Million in Tax Revenue. In addition to those two industries, The NS Sportfishing industry is growing and more emphasis is being placed on attracting Fishers from outside our Province. This industry is currently worth \$65 Million dollars to the economy, with the Strait bringing in a big piece of that. The Strait has 15 + rivers that come in off of the Strait that all have world class Atlantic Salmon, Brook Trout and Brown Trout. These species are considered in the top 5 in the world for Sport Fish.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Socio-Economic Environment	For the overall ECONOMY The proposed treatment system runs the risk of harming three lifelong Industries worth close to \$4 Billion dollars to the Nova Scotia economy. The tourism industry is worth \$2.7 Billion and prides itself on warm, clean water and world class sandy beaches. The Commercial Fishing Industry is worth over \$1 Billion and prides itself on sustainable wild shellfish that is shipped all across the world. The Sport Fishing industry is worth \$56 Million and the Northumberland Strait is home to the last remaining stable Atlantic Salmon stocks in the province. All of this is at risk due to 32,000,000,000 Liters of waste water PER YEAR that will be 37 Celsius that will contain deleterious substances harmful to Fish species and humans.	Individual Public Comment	Refer to section 7.5 for comments concerning what contingency measures will be in place to mitigate potential impacts due to rapid fluctuations in water temperature at the diffuser location.
Socio-Economic Environment	Hello, I am super concerned about the pipe and this whole situation. It worries me that so many more people are concerned about the economical impact than the environment when in fact this will indeed affect our forest industry as well.	Individual Public Comment	The new effluent treatment facility will be on-site which will see only treated effluent leaving the NPNS facility after the new system is operational. The system used automation and monitoring obtain information on operational issues. teh syetem will operate under an industrial approval from NSE that will require onqoing monitoring and reporting.
Socio-Economic Environment	I also have concerns about the impact on our tourist and fishing industries.	Individual Public Comment	Thank you for the information. Section 7.3 of the Focus Report looks at the impacts of treated effluent on representative key marine specific that are important for fisheries. The receiving water study (Section 4.2) identified predicted water quality by the edge of the mixing zone meets water quality objectives and/or background. Based on the data provided in the Focus Report impact to fish and fish habitat is not predicted. Disruption of fisheries within the area of the pipe construction will be minimized to the extent possible.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Socio-Economic Environment	I am also concerned about the continued health of the Northumberland Strait, which attracts thousands of tourists, visitors and summer residents who fish, dive, swim and boat in its beautiful waters. The Northumberland Strait is a key part of life and the economy of Pictou County and draws people to our area.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways). Section 2 of the focus characterizes the current untreated and untreated effluent, and presents the results of Bench Test results for the new treated effluent. Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Socio-Economic Environment	I am concerned with the lack of studies around the economic impact this project could have on the tourism industry. Tourism produced 2.8 billion dollars in revenues in Nova Scotia in 2018. Northumberland Shore area typically makes up 8% of this total. The Pictou Lodge Beach Resort (built in 1924) is located about 5km down the strait from the proposed outfall area. The resort has been built to a 2.8 million dollar business that employs 70 people. According to the 2017 NS Tourism Visitor Exit Survey, the top reasons pleasure tourists visit Nova Scotia are "Coastal Sightseeing - 47%" and "Visit a Beach - 49%". Lobster remains an important part of the visitors experience as well. 45% of pleasure visitors to the province in 2017 ate lobster while here.	Individual Public Comment	Thank you for the information. Section 7.3 of the Focus Report looks at the impacts of treated effluent on representative key marine specific that are important for fisheries. The receiving water study (Section 4.2) identified predicted water quality by the edge of the mixing zone meets water quality objectives and/or background. Based on the data provided in the Focus Report impact to fish and fish habitat is not predicted. Disruption of fisheries within the area of the pipe construction will be minimized to the extent possible.
Socio-Economic Environment	I have been active working with a number of groups over the past few years on the critical environmental problems surrounding offshore drilling including its dire effect on marine mammals, the risks to our seafood and tourism industries, and above all the industry-captive nature of our offshore regulatory regime, notably the CNSOPB. What does this have to do with Northern Pulp's proposed Effluent Treatment Facility? Everything. The problems and effects are the same.	Individual Public Comment	Refer to section 4.2 and Addendum 3.0 for comments concerning the receiving water study. The Project will meet environmental regulations and requirements, and the NPNS will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment. Furthermore, Section 7.3 examines the Key Marine Fisheries.
Socio-Economic Environment	I would like to address the risk of direct human contact with the effluent in the vicinity of the proposed outfall location CH-B. While this proposed outfall location is stated to be 4km from shore, it is in fact roughly 2km from both Caribou Island and Munroe's Island, both of which contain provincial parks	Individual Public Comment	Addressed in EARD.
Socio-Economic Environment	If Northern Pulp is permitted to place an effluent pipeline in Caribou Harbour, near one of the most popular provincial park campgrounds and beaches along the Northumberland Shore, any detrimental effects from the effluent would be felt immediately by tourism operators all along the Northumberland Strait. Visitors already comment on the 'stink' that hangs over the Town of Pictou from Northern Pulp, and it would be difficult to confidently tell visitors that it is safe to swim in the waters of the Northumberland Strait with the lack of information that has been given about the makeup of the effluent.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Socio-Economic Environment	If such a break would occur, there is also the potential for the real estate market to die completely in this area of Nova Scotia - for homes and cottages. I personally will have to consider selling both my home in Pictou and my cottage on Cape John should a decision be made to move forward on this project. If and when there is a breach in the pipe affecting either the Pictou watershed or the Northumberland Strait, this would render both properties unsaleable and that is not a risk I am willing to take.	Individual Public Comment	Refer to section 3.5 for comments concerning pipeline leak detection and enhanced pipeline protection options.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Socio-Economic Environment	In the absence of open houses (with the new proposed outfall location in Caribou), town hall meetings, and accessible, factual, and comprehensive information, the public and community at large is at a tremendous disadvantage to communicate and understand their concerns as they relate to the proposed project. From my work in the past with community development, critical aspects to build relationships and trust within a community come from open and transparent dialogue that includes all stakeholders. If this community, government, and corporation (Northern Pulp) have learned anything from the legacy of Boat Harbour, is that the community must be consulted in a transparent, truthful, accessible, and meaningful way.	Individual Public Comment	Refer to section 1.2 for the plan to share future reports relevant to this Project with the public and the Mi'kmaq such as PLFN.
Socio-Economic Environment	My last point that I would like to bring up, would be section 4, on page 25/26 where it states that Northern Pulp would not be able to remain competitive. This is a very loose term, that being competitive. What exactly does that mean? Does that mean that they immediately lose money and would have to shut down? Or simply mean that their profit would not be the same as it would be with the current pulp it produces. In that section it cites appendix B. Upon reading that appendix, it claims high wood use as well as electrical costs would make it not viable for their company. This seems to be very misleading, because after a quick google search of Northern Pulp's own website, they claim to be almost entirely self-sufficient, because they use their own power generation facility to produce 90% of their electrical needs. <sup>2</sup> So, which is it?	Individual Public Comment	It is correct that NPNS has its own power generation facility. The decision on viability is a business decision made by NPNS.
Socio-Economic Environment	NPNS is so inaccurate in these maps and statements. I not sure if they are completely trying to mislead the public on how little fishing is in this area, or is NPNS using outdated information. In the meeting NPNS had with the fisherman in Dec 2017, they were not aware of any fishing done at the original site. The fisherman told them at that meeting their information is incorrect NPNS was told at a stakeholders meeting that their maps were incorrect A phone call to the Department Of Fisheries in Pictou would verif, how much fishing is done in this area.	Individual Public Comment	Refer to section 7.2 for comments concerning the marine fish and fish habitat baseline surveys.
Socio-Economic Environment	On top of the jobs that the plant provides it also supports hundreds of fishermen with T4's issued to them in the 10's of millions of dollars each year. NNS operates its own private wharf right here in Caribou in front of the processing plant. This wharf supports over 60 local fishermen. NNS then puts trucks on the roads all year long going to about 10 wharfs directly here in the Straight then over another 50 throughout NS from Cape Breton to Yarmouth and into PEI and NB. NNS and myself as a lobster fisherman is very concerned about the harm to fish and fish habitat that could result from Northern Pulp's proposal to discharge 70-90 million litres of treated effluent from a bleached kraft mill every day through a 10.5k pipe into the prime fishing grounds of the Northumberland Strait.	Individual Public Comment	The provincial environmental assessment process is intended to provide an assessment of potential environmental effects. Provincial environmental assessment regulatory authorities will review the information provided by the proponent to determined if the project is acceptable from the perspective of potential environmental effects.
Socio-Economic Environment	The changes in water color, and the sight and smell of waste will affect land and property values, even passenger service on the Northumberland Ferry during the summer months has the potential to be affected.	Individual Public Comment	Refer to section 4.2 for comments concerning the receiving water study.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Socio-Economic Environment	The current state of air quality and odours produced from the plant have had a negative socio-economic impact on the community. In my tourism operation we have lost long term guests who had to leave because of poor air quality. We have lost potential group bookings and weddings because of the air quality on the day of planning visits and tours. The local town has lost residents and potential investors because of the air quality. There is no current study on what the economic impact the poor air quality and odour produced by mill has had on tourism industry and economic development in the community over the last 50 years. This is of concern to me.	Individual Public Comment	Refer to section 6.3 for comments concerning an ambient air monitoring plan.
Socio-Economic Environment	The human recreational and tourism costs of loss of swimming, boating and recreation in the area including many parks and public beaches could reach millions of dollars of revenue to the community just by the fact that tourists would how that the effluent is being released into the area.	Individual Public Comment	Addressed in EARD.
Socio-Economic Environment	The Northumberland Strait has a very shallow channel so there is so concern the water is just not deep enough for a pipe. The Nova Scotia/PEI ferry travels this route so what effect will this pipe and effluent have on this service provided to residents and tourists during the summer months.	Individual Public Comment	Addressed in EARD.
Socio-Economic Environment	The Nova Scotia Economy exports \$1.5 Billion dollars worth of Shellfish per year. Shellfish that are caught in the Strait are sold under the "Atlantic Canadian" brand. Contamination of even a few shellfish would destroy the excellent reputation Atlantic Canada has in regards to this resource.	Individual Public Comment	Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.
Socio-Economic Environment	The outfall location of the proposed project is approximately 4.1km from the Northumberland ferry wharf, taking it approximately 5km outside of one of the most popular beaches visited by tourists and locals around. The Caribou Provincial Park is where I spend every day walking, in the summer it is where I swim, and it is where I want my children to swim. Reflecting on what the water looked like in MacLellan Memorial Camp on the beach, and the contamination that occurred on that shoreline as a result of discharge into the strait following effluent treatment from Boat Harbour, I cannot help but think of the careful measures that were taken to prevent children from swimming in that water due to contamination. I am struggling to understand how constant flow, with an indeterminable end, of effluent can be discharged within 5 km of one of our provincial treasures, Caribou Provincial Park, and jeopardize the ability of children and families to enjoy what this coastline can offer.	Individual Public Comment	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Socio-Economic Environment	The proposed area borden an extremely popular Caribou/Munroes Island provincial park and nature reserve. I see the pleasure that ft brings to locals and tourist to be able to walk on such a pristine place.	Individual Public Comment	Thank you for the information. Section 7.3 of the Focus Report looks at the impacts of treated effluent on representative key marine specific that are important for fisheries. The receiving water study (Section 4.2) identified predicted water quality by the edge of the mixing zone meets water quality objectives and/or background. Based on the data provided in the Focus Report impact to fish and fish habitat is not predicted. Disruption of fisheries within the area of the pipe construction will be minimized to the extent possible.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Socio-Economic Environment	The proposed position of the effluent diffuser is immediately upstream of the Caribou Provincial Park, the Pictou Lodge and across the harbour is the Pictou Landing First Nations lands. As the Northumberland Strait tides fall twice daily the Northern Pulp effluent will be mixing and flowing toward these locations. The smell of oxides of sulfur, sulphur dioxide, hydrogen sulphide and related kraft pulp wastes will greatly impact beaches, cause undue respiratory stress for humans and other mammals on, in or adjacent to the Northumberland Strait.	Individual Public Comment	The receiving water study (Focus Report Section 4.2) evaluates the extent of mixing and distance where changes from background are observable. The receiving water study indicates predicted changes to water quality to be limited to well within 100 m of the outfall.
Socio-Economic Environment	The proposed treatment system runs the risk of harming the growing tourism industry along the North Shore which promotes the area's warm, clean water and world class sandy beaches. Visitors are attracted to the North Shore by the many opportunities to enjoy the natural world, to consume high quality local food and beverage products, and experience small town life. Many of the thriving new businesses market these experiences.	Individual Public Comment	Refer to section 4.2 and Addendum 3.0 for comments concerning the receiving water study. The Project will meet environmental regulations and requirements, and the NPNS will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment. Furthermore, Section 7.3 examines the Key Marine Fisheries.
Socio-Economic Environment	The site of effluent discharge would be into these waters and within sight of four islands, all of which are permanently or seasonally inhabited – Caribou Island, Caribou and Munroe Island Provincial Park, Pictou Island, and Prince Edward Island. Not only the commercial use, but the recreational use of effluent waters and the potential socio-economic impact on local residents and businesses gives pause.	Individual Public Comment	Thank you for the information. Section 7.3 of the Focus Report looks at the impacts of treated effluent on representative key marine species that are important for fisheries. The receiving water study (Section 4.2) identified predicted water quality by the edge of the mixing zone meets water quality objectives and/or background. Based on the data provided in the Focus Report impact to fish and fish habitat is not predicted. Disruption of fisheries within the area of the pipe construction will be minimized to the extent possible.
Socio-Economic Environment	There are about 300 people who work for Northern Pulp. Their economic activity accounts for 5 indirect jobs for everyone direct job so a total of about 1800 jobs. There are over 3000 fishermen who work in the Strait. Applying that same metric would mean 18,000 jobs would be at risk if we kill the Northumberland Strait fishing industry. Tourism was not even considered in Northern Pulp's submission.	Individual Public Comment	Refer to section 4.2 and Addendum 3.0 for comments concerning the receiving water study. The Project will meet environmental regulations and requirements, and the NPNS will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment. Furthermore, Section 7.3 examines the Key Marine Fisheries.
Socio-Economic Environment	There is no mention of the impact of pipeline construction sedimentation to accelerating the next channel dredging timeline or whether the contents of effluent sediment will curtail or complicate the ferry channel dredging in the future. The ferry is the only direct connection between PEI and Nova Scotia. Both provinces emphasize the natural setting and recreational activities in tourism promotion. The ferry interacting with the effluent plume is not addressed in the application; for example: colour, odour, froth and aerosolizing of the effluent – potential negative impact to the iconic tourist experience that reaches beyond the ferry ride. Pictou Island is experiencing success as a recreational destination and that ferry also operates out of Caribou Harbour.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Socio-Economic Environment	Tourism will be further affected as we already have seen the impact on the town of Pictou with the existing smell from the Northern Pulp plant with the impact of the discharge location near the Caribou Ferry Terminal connecting us with Prince Edward Island. This terminal is a major tourism entry point into our county of Pictou. Who will be excited to go into the waters to swim, kayak, etc around this area when they know that possibly there could be pollution from a pulp mill in the water? This proposal will affect tourism. The visibility of such a pipe along the Pictou causeway or anywhere along the Trans Canada Highway connector to the Caribou Ferry Terminal will be a clear negative to our tourism image. Our tourism industry is worth millions of dollars.	Individual Public Comment	Refer to section 9.2 for comments concerning the Human Health Risk Assessment. (consumption of fish, drinking water, recreational water and sediment, air inhalation and other potential pathways). Section 2 of the focus characterizes the current untreated and untreated effluent, and presents the results of Bench Test results for the new treated effluent. Refer to section 7.3 for comments concerning the impact assessment of treated effluent on representative key marine fish species.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Socio-Economic Environment	Water Pollution / Economic Impact: As soon as the effluent starts pumping in, I suspect they will lose certification as Atlantic Canadian lobster is certified to be coming from clean, pollution free waters. The loss of this certification will impact markets globally and the prices will no doubt drop. Considering Seafood is one of our biggest exports in the Province of NS, worth over a billion dollars, is it worth the risk? Will there be a compensation package to all fishermen in the Strait ?	Individual Public Comment	Thank you for the information. Section 7.3 of the Focus Report looks at the impacts of treated effluent on representative key marine specific that are important for fisheries. The receiving water study (Section 4.2) identified predicted water quality by the edge of the mixing zone meets water quality objectives and/or background. Based on the data provided in the Focus Report impact to fish and fish habitat is not predicted. Disruption of fisheries within the area of the pipe construction will be minimized to the extent possible.
Socio-Economic Environment	We do not know the ingredients. They will start burning contaminated sludge without a thorough study of emission concerns, the environment, the fisheries, sea life and tourism. All are at risk the strait can freeze so how will the warmth flow impact lobster spawning grounds. Much further studies need to be done.	Individual Public Comment	Addressed in EARD.
Socio-Economic Environment	What effect will mill effluent in the strait have on tourism?	Individual Public Comment	Addressed in EARD.
Socio-Economic Environment	What significance is given to the cultural and historical aspect of Caribou Harbour? What consideration is there for the fact that generations of families living in the area consider Caribou Harbour a sanctuary for wildlife, a safe harbour for swimming, kayaking and sailing? It is the location of the Monroe's Island wildlife reserve, the Caribou Provincial Park and the Pictou Lodge, which has been in operation since 1927. The area has long been identified as a major area for outdoor recreation. Pictou County is defined by the generations of families who have earned their living from fishing lobster and other species in the immediate vicinity of Caribou Harbour. Within the communal rights of people living in the area to the peaceful enjoyment of nature and the established right of fishers to work in the area, the designation of Caribou Harbour as a location for an outlet of industrial waste seems to afford Northern Pulp a disproportionate right to the use of the waters of Caribou Harbour. This access threatens other citizens with the potential for an environmental disaster, the loss of livelihood and the loss of a unique habitat.	Individual Public Comment	Addressed in EARD.
Socio-Economic Environment	Whether property sellers on the harbour would need to highlight effluent as one of the disclosure items has not been addressed and neither negative property value and tax base impact nor the quiet enjoyment of current owners.	Individual Public Comment	The environmental effects of the project are evaluated.
Socio-Economic Environment	This in turn, will threaten tourism and fishing industries in Nova Scotia, Prince Edward Island, New Brunswick, Newfoundland and Quebec, which support a global food supply and generate billions of dollars in economic activity. Furthermore, the economic backbone of our Maritime economy and the thousands of commercial fishers in the Northumberland Strait and the five provinces bordering the Gulf of St. Lawrence, depend on these sustainable fisheries to support their families and the hundreds of coastal communities in which they live.	Save Our Seas and Shores Coalition	Concerns are noted and understood. NPNS through its experts have recommended the science, engineering and design with the priority on minimizing environmental effects. Fishing and forestry industries have co-existed for decades in this region, a scenario that is expected to continue with no impact.
Socio-Economic Environment	Communities outside of the immediate geographic areas of the PLFN and town of Pictou were not afforded public consultation opportunities, despite the fact that air emissions travel to these communities. People know the air emissions travel because on some days, there is an obvious smell from the mill.	Shore Nova Scotia Chapter, Council of Canadians	NSE provides for an opportunity for everyone to provide comments as part of their EA process.
Socio-Economic Environment	Furthermore, the proposed treatment system runs the risk of harming sustainable industries all along the North Shore. The tourism industry prides itself on warm, clean water and world class sandy beaches. The commercial fisheries relies on sustainable wild shellfish that is shipped all across the world.	Shore Nova Scotia Chapter, Council of Canadians	Refer to section 4.2 and Addendum 3.0 for comments concerning the receiving water study. The Project will meet environmental regulations and requirements, and the NPNS will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Socio-Economic Environment	TIANS is extremely concerned about the socio-economic effect on the Tourism Industry. Not only does this threaten the marine environment, it puts at risk other important economic sectors, including fisheries. Culinary Tourism, presently enjoying tremendous growth and recognition, is directly dependant on a healthy fishery. Nova Scotia lobster is widely marketed as a prominent feature of the Nova Scotia experience. The health of their larvae is essential to its sustainability both as a domestic and international product. The Indigenous Tourism product is also a significant growth opportunity.	Tourism Industry Association of NS	Refer to section 4.2 and Addendum 3.0 for comments concerning the receiving water study. The Project will meet environmental regulations and requirements, and the NPNS will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment. Furthermore, Section 7.3 examines the Key Marine Fisheries.
Socio-Economic Environment	Tourism Operators explain the decline in visitor stay is a direct result of the various factors emanating from the effect of the Northern Pulp Mill.	Tourism Industry Association of NS	The comment is noted.
Socio-Economic Environment	Toxic waste diverted to the Northumberland Strait will affect visitor perception and experience.	Tourism Industry Association of NS	The receiving water study (Section 4.2) evaluates the extent of effects to water quality.
Soils and Geology	FONS members were appalled by the prospect of up to 85,000,000 litres of hot treated effluent containing harmful chemicals, being pumped directly and continuously into the Strait every day. They are very concerned about the potential for serious and irreversible damage to Pictou County's air, soil, freshwater, wetlands and wildlife, and to the Strait ecosystem and the local economy it supports, including fisheries and tourism.	EcoJustice and Friends of the Northumberland Strait	The Project will meet environmental regulations and requirements, and the Proponent will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment.
Soils and Geology	It is a serious omission in this NPNS EA that there be no discussion of any environmental effects, or any discussion at all, in the NPNS materials in relation to the Canso site, and the mercury contamination. Likewise, there is no discussion about how construction of the ETF would affect the mercury contamination present in the bedrock and on the site.	EcoJustice and Friends of the Northumberland Strait	Monitoring will be conducted as part of construction. Contingency plans will be in place to address contaminant if identified.
Soils and Geology	Missing Studies - Report and analysis on the Canso chemical site and mercury contamination and how it may be impacted by the construction and operation proposed ETF, and/or how it may impact effluent composition and risks of mercury contamination to the environment and human health	EcoJustice and Friends of the Northumberland Strait	Monitoring will be conducted as part of construction. Contingency plans will be in place to address contaminant if identified.
Soils and Geology	The EA submission, although lengthy, lacks critical information, or sufficient detail, in crucial areas such as: e) Studies and analyses regarding mercury issues associated with the project, including methylmercury, mercury and other metals in effluent, and mercury contamination of the NPNS/Canso site;	EcoJustice and Friends of the Northumberland Strait	Refer to section 2.4 for comments concerning the physical and chemical characterization of NPNS' FUTURE raw wastewater, modeling results and laboratory trials.
Soils and Geology	geotechnical assessments must be completed and reviewed by project stakeholders.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 2.1 for comments concerning effluent pipeline location, routing and intersecting properties.
Soils and Geology	Finally, I would like to raise the issue of the known presence of mercury contamination from the Canso Chemicals plant in bedrock and in 1990s era "secure landfills", on the site adjacent to Northern Pulp very close to where the plan is for components of the proposed ETF to be set into the ground at a depth of 7 feet, requiring digging to that depth or more.	Individual Public Comment	Monitoring will be conducted as part of construction. Contingency plans will be in place to address contaminant if identified.



Valued Environmental Component (VEC)	Concern	Source	Response Comment
Soils and Geology	The proposal does not mention the known mercury contamination in the soil and bedrock proximal to the proposed new treatment plant and basins, nor does it acknowledge the potential for disturbing the mercury contamination during construction. (Baxter, J., The Canso Chemicals mystery: With the chemical plant long gone, why is the company still alive? And what about all that mercury pollution?, Halifax Examiner, March 7, 2019, <a href="https://www.halifaxexaminer.ca/province-house/the-canso-chemicals-mystery-with-the-chemical-plant-long-gone-why-is-the-company-still-alive-and-what-about-all-that-mercury-pollution/">https://www.halifaxexaminer.ca/province-house/the-canso-chemicals-mystery-with-the-chemical-plant-long-gone-why-is-the-company-still-alive-and-what-about-all-that-mercury-pollution/</a> ). Yet, Section 2.5.2 (p.15) of the proposal explicitly identifies that siting decisions of the treatment facility were made with consideration for sensitive environmental features and that mitigation and compensation measures were developed where avoidance was not possible.	Individual Public Comment	Monitoring will be conducted as part of construction. Contingency plans will be in place to address contaminant if identified.
Soils and Geology	The proposal fails to disclose that the location of the new on-site ETF will be located adjacent to Canso Chemicals which is a former chemical plant that has known deposits of mercury on its property. The proposal does not address the potential interaction that the presence of mercury will have on the construction and operation of the ETF and the environment.	Individual Public Comment	Monitoring will be conducted as part of construction. Contingency plans will be in place to address contaminant if identified.
Soils and Geology	There is no mention of coal. There is a substantial amount of coal on the ocean floor sub surface as well as surface all along the pipe location and outflow location. A conversation I had with a geologist from Nova Scotia said "disturbing coal deposits releases methane. Methane in either air or water is not good. The submission is missing this information! Information that is a necessity to evaluate the impacts of the project.	Individual Public Comment	Refer to section 2.2 for comments concerning geotechnical surveys of the marine portion of the pipeline route including ice scour.
Soils and Geology	The EA registration document fails to identify or assess impacts of construction and operation of the proposed treatment facility near an existing mercury waste dump and mercury contaminated soil	Sierra Club Canada Foundation	Monitoring will be conducted as part of construction. Contingency plans will be in place to address contaminant if identified.
Surface Water	FONS members were appalled by the prospect of up to 85,000,000 litres of hot treated effluent containing harmful chemicals, being pumped directly and continuously into the Strait every day. They are very concerned about the potential for serious and irreversible damage to Pictou County's air, soil, freshwater, wetlands and wildlife, and to the Strait ecosystem and the local economy it supports, including fisheries and tourism.	EcoJustice and Friends of the Northumberland Strait	The Project will meet environmental regulations and requirements, and the Proponent will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment.
Surface Water	The effluent pipeline will go over Pictou Harbour, attached to the causeway across Highway 106 and then in a trench through the Town of Pictou's water supply area, putting both at risk in the event of a pipeline breach or spill. Similarly, the potential for pipeline failure at Caribou Harbour is considerable. These are unacceptable risks.	Ecology Action Centre	Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
Surface Water	The proponent must provide more detail on what is meant by moving the alignment to the centre of the road, and on which watercourses, in particular, they intend to carry this out.	Gulf Nova Scotia Fleet Planning Board and Fishermen's Working Group	Refer to section 2.1 for comments concerning effluent pipeline location, routing and intersecting properties.
Surface Water	A spill in the Pictou watershed is an adverse effect, we don't salt in the watershed, no pollution is allowed in the watershed, once there is a spill there will be no way to repair our watershed.	Individual Public Comment	Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.
Surface Water	I share in the fear that Pictou's watershed area will be placed at risk from pipe leakages and that the coastal waters around Pictou County will become devoid of marine life, unsafe for human recreation, and a vital fishing industry will be lost.	Individual Public Comment	Refer to section 5.2 for comments concerning risks associated with terrestrial pipeline leaks or spills.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Terrestrial Wildlife/Priority Species	As discussed below, no testing or test results have been provided to show the effluent's composition. Most of the substances contained in raw effluent are not discussed, and their impacts on the marine, freshwater, terrestrial and atmospheric environments are not analysed. Likewise, as will be discussed further below, the Stantec modelling used to predict the effluent mixing and transport in the marine environment has fundamental flaws, and must be disregarded.	EcoJustice and Friends of the Northumberland Strait	Section 2.3 of the Focus Report provides the physical and chemical characterization of NPNS' PRESENT raw wastewater and the proposed technology for treatment.
Terrestrial Wildlife/Priority Species	FONS members were appalled by the prospect of up to 85,000,000 litres of hot treated effluent containing harmful chemicals, being pumped directly and continuously into the Strait every day. They are very concerned about the potential for serious and irreversible damage to Pictou County's air, soil, freshwater, wetlands and wildlife, and to the Strait ecosystem and the local economy it supports, including fisheries and tourism.	EcoJustice and Friends of the Northumberland Strait	The Project will meet environmental regulations and requirements, and the Proponent will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment.
Terrestrial Wildlife/Priority Species	For over 50% (9/17) of the VECs examined in this section, NPNS failed to conduct its own primary research to determine baseline conditions. The following list identifies the VECs for which NPNS did not complete primary studies: a) Freshwater Fish and Fish Habitat; b) Wetlands; c) Flora/Floral Priority Species d) Terrestrial Wildlife/Priority Species; e) Migratory Birds and Priority Bird Species/Habitat f) Harbour Physical Environment, Water Quality and Sediment Quality; g) Marine Fish and Fish Habitat; h) Marine Mammals, Sea Turtles and Marine Birds; and i) Marine Archaeological Resources	EcoJustice and Friends of the Northumberland Strait	Additional baseline surveys were completed in 2019 and the results of those surveys are provided in the Focus Report.
Terrestrial Wildlife/Priority Species	the Atlantic Canada Conservation Data Centre (AC CDC) report relied on by NPNS in support of its evaluation of the potential impacts on various species (including birds, terrestrial wildlife, marine mammals, fish, sea turtles, and others) purports to identify the species "known to occur" in the vicinity of the ETF project. <sup>70</sup> However, the majority of the data relied upon by AC CDC is over a decade old – and in some cases dates back over 50 years. <sup>71</sup> It is trite to state that the species residing in any particular area change over time. In the absence of current research, NPNS cannot purport to identify the species that may be affected by its project, much less evaluate the potential impacts on those species.	EcoJustice and Friends of the Northumberland Strait	Historical occurrences documented in CDC records provide some information about species that are known to occur in an area and are not interpreted to indicate that they currently occur there, or that other species do not occur in an area. Additional baseline surveys were completed in 2019 and the results of those surveys are provided in the Focus Report.
Wetlands	Unfortunately, so little information has been provided within the Environmental Assessment Registration Document for the proposed Undertaking dealing with "wetlands" that CPAWS-NS is unable to carry out a proper review. In fact, it is shocking just how little information is provided. I would like to review the detailed field assessments for every one of these wetlands. I'd like to review what species are found there, how the ecosystems change spatially, and what is the nature of the wetland edge condition. I'd like to review how the hydrology may be impacted by this proposed undertaking, and to assess how the fieldwork was set up to ensure objectivity. But, I cannot, because the majority of the wetlands in the study site simply have not been assessed on-the-ground, so that sort of information is unavailable for review.	Canadian Parks and Wilderness Society – Nova Scotia Chapter	Additional baseline surveys were completed in 2019 and the results of those surveys are provided in the Focus Report. Specifically Section 5.1 addresses wetlands. Also refer to the Environmental Planning and Mitigation Measures document prepared as submission Appendix A2.1-2.
Wetlands	FONS members were appalled by the prospect of up to 85,000,000 litres of hot treated effluent containing harmful chemicals, being pumped directly and continuously into the Strait every day. They are very concerned about the potential for serious and irreversible damage to Pictou County's air, soil, freshwater, wetlands and wildlife, and to the Strait ecosystem and the local economy it supports, including fisheries and tourism.	EcoJustice and Friends of the Northumberland Strait	The Project will meet environmental regulations and requirements, and the Proponent will abide by mitigation and monitoring conditions imposed by regulatory agencies for the protection of the environment.

Valued Environmental Component (VEC)	Concern	Source	Response Comment
Wetlands	For over 50% (9/17) of the VECs examined in this section, NPNS failed to conduct its own primary research to determine baseline conditions. The following list identifies the VECs for which NPNS did not complete primary studies: a) Freshwater Fish and Fish Habitat; b) Wetlands; c) Flora/Floral Priority Species d) Terrestrial Wildlife/Priority Species; e) Migratory Birds and Priority Bird Species/Habitat f) Harbour Physical Environment, Water Quality and Sediment Quality; g) Marine Fish and Fish Habitat; h) Marine Mammals, Sea Turtles and Marine Birds; and i) Marine Archaeological Resources	EcoJustice and Friends of the Northumberland Strait	Additional baseline surveys were completed in 2019 and the results of those surveys are provided in the Focus Report.
Wetlands	Behind the beach, and facing the harbour is a wetland which is fed by no more than a few small culverts underneath the causeway entering Caribou Island. Drainage of these wetlands is therefore limited. It is likely, therefore, that toxins from the effluent would accumulate within this as well as the many other wetlands within the harbour. In the case of Waterside, there could potentially be higher than acceptable toxins leaching into a very popular and highly used recreation area.	Individual Public Comment	Effluent is proposed to be discharge more than 1.5 km offshore. Additional information on the pipeline and diffuser location are provided in the Focus Report, Section 2.1.
Wetlands	The Effluent is going to be fresh water. The Strait is comprised of salt water and species that require a specific level of salinity. At a rate of 70-90 Million litres a day, the salinity of the Strait will change as the waste continues to accumulate over time. This will impact Wetlands, all species that use the Strait as well as the food sources within.	Individual Public Comment	To provide some context, the anticipated discharge rate would be approximately similar to the average flow rate of the East River at Stellarton (85,000 m3/day), which is approximately 0.6% of what the flow from the Miramichi River would be. As such, the contribution of this discharge would not be measurable in the context of all rivers discharging into the Strait.
Wetlands	The report indicates that no field assessments for wetlands in the pipeline footprint area were completed due to the pipeline redesign required in fall 2018. Functional assessment information is only provided for WL-1 and WL-2 within the effluent treatment facility (ETF) footprint. Some of the wetlands in the pipeline footprint area would likely be considered wetlands of special significance by NSE given their location within a source water protection area or their type being salt marsh. The assessment of potential impact to wetlands cannot be determined without proper field assessment and functional assessment work being completed. This work should be completed prior to NSE making a decision on the proposed project.	Individual Public Comment	These surveys were completed in 2019 and the results provided in the Focus Report.
Wetlands	The report indicates that the assessments listed below are not yet completed: • Avian / turtle follow-up field studies, • MEKS field surveys, • Vegetation, wetland and watercourse follow-up field studies, • Marine seismic, geotechnical and habitat surveys The potential environmental impacts of the proposed project cannot be fully assessed with this work not yet completed, in particular the marine habitat surveys. NSE should require these assessments be completed prior to granting approval.	Individual Public Comment	These surveys were completed in 2019 and the results provided in the Focus Report