# DRAFT TERMS OF REFERENCE FOR THE PREPARATION OF AN ENVIRONMENTAL ASSESSMENT REPORT FOR PUBLIC REVIEW AND COMMENT

Regarding the Replacement Effluent Treatment Facility Project Proposed by Northern Pulp Nova Scotia Corporation

NOVA SCOTIA ENVIRONMENT January 8, 2020

#### **FOREWARD**

#### **Current Context**

On December 17, 2019, following an environmental assessment review of the Northern Pulp Effluent Treatment Facility Focus Report, the Minister of Environment decided that an Environmental Assessment Report was required to address deficiencies in the information provided. On December 20, 2019, Northern Pulp announced its intent to cease operations at the Northern Pulp Mill. Notwithstanding that announcement, on January 2, 2020, Northern Pulp informed Nova Scotia Environment of its intent to continue with the Environmental Assessment Report process. Since the company has chosen to continue with the process, Nova Scotia Environment is required to release this draft Terms of Reference in accordance with the Environmental Assessment Regulations.

This Draft Terms of Reference is based on the proposed Project as described in the February 2019 Environmental Assessment Registration Document and in the subsequent October 2019 Focus Report.

The *Boat Harbour Act* sets out a deadline of January 31, 2020. Further to the above, Nova Scotia Environment expects Northern Pulp to provide information as part of its input on this draft Terms of Reference about any anticipated changes to the proposed Project as a result of the *Boat Harbour Act*. Nova Scotia Environment further expects this information to include how these changes may affect the Terms of Reference.

#### **Environmental Assessment Process to Date/Next Steps**

An Environmental Assessment is a planning tool that allows sustainable development to occur while protecting the environment. When a company registers its project for an environmental assessment, government's expectation is that the company provide a complete and comprehensive assessment of the Project's potential risks and related mitigations. Based on the environmental assessment review, the Minister of Environment has a number of decision options: If the Minister is of the opinion that any adverse effects or significant environmental effects related to the project can be mitigated, then the project is able to proceed. If such effects cannot be mitigated, a project may be rejected. In cases where not enough evidence is provided to determine whether or not there may be adverse effects or significant environmental effects related to a project, the Minister may require more information (in the form of a more information decision, a Focus Report or an Environmental Assessment Report) to be provided to address gaps or deficiencies in the required information.

Northern Pulp registered it Effluent Treatment Facility for environmental assessment on February 7, 2019. A thorough environmental assessment review concluded that the Registration Document did not provide enough information to determine if adverse effects or significant environmental effects would result from the Project. On March 29, 2019, the Minister determined that the company would have up to one year to submit a Focus Report to address identified information gaps in the Registration Document.

On October 2, 2019, the company submitted a Focus Report. A thorough environmental assessment review of this information concluded that the company failed to provide enough information to properly assess whether there may be adverse effects or significant environmental effects as a result of the Project and, on December 17, 2019, the Minister decided an Environmental Assessment Report was required. Through the environmental assessment review process, concerns were raised about incorrect and incomplete baseline information; assumptions and methodology used in the analysis; and the absence of mitigation measures related to the potential environmental effects. Further specifics regarding these deficiencies are outlined in comments provided during the consultation period, which are posted on our website and reflected in this Draft Terms of Reference, for the preparation of an Environmental Assessment Report.

Northern Pulp is expected to prepare an Environmental Assessment Report that addresses the deficiencies in the information provided to date through the environmental assessment process and which fulfills the intent of the Terms of Reference. The Environmental Assessment Report must consider all the effects that are likely to arise from the Project, including any not explicitly identified in the Terms of Reference.

Regulations require that Draft Terms of Reference for the Environmental Assessment Report be prepared by the Environmental Assessment Administrator and subsequently be made available for public review and comment prior to being finalized and provided to the Proponent (Northern Pulp).

This document presents the Draft Terms of Reference for public review and comment. The Minister of Environment invites interested Nova Scotians to examine the Draft Terms of Reference and provide comments on their adequacy and suggestions for their modification. Only those comments related to specifics of the Terms of Reference will be used to inform the finalization of the Terms of Reference through this process. As required by the Environmental Assessment Regulations, the company must be advised of comments received through this process.

Comments should be submitted in writing through the EA website at <a href="https://novascotia.ca/nse/ea/comments.asp">https://novascotia.ca/nse/ea/comments.asp</a>, by email at <a href="EA@novascotia.ca">EA@novascotia.ca</a> or by mail to the following address on or before **February 7, 2020**, and addressed to:

Environmental Assessment Branch
Nova Scotia Environment
P.O. Box 442, Halifax, Nova Scotia B3J 2P8
EA@novascotia.ca

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#### 1.0 INTRODUCTION

#### 1.1 Background

The Replacement Effluent Treatment Facility Project (the Project or undertaking) proposed by Northern Pulp Nova Scotia Corporation (Northern Pulp or the Proponent) was registered for environmental assessment (EA) as a Class 1 undertaking pursuant to Part IV of the *Environment Act* on February 7, 2019.

On March 29, 2019, the Minister of Environment determined that the registration information was insufficient to make a decision on the Project, and a Focus Report was required in accordance with clause 13(1)c of the Environmental Assessment Regulations, pursuant to Part IV of the Environment Act.

On October 2, 2019, Northern Pulp submitted the Focus Report for EA, in accordance with Part IV of the Environment Act. Public comments on the Focus Report were accepted until November 8, 2019.

On December 17, 2019, the Minister of Environment concluded that Northern Pulp would be required to complete an EA Report on this Project.

#### 1.2 Purpose of the Terms of Reference

An Environmental Assessment is a planning tool that allows sustainable development to occur while protecting the environment. When a company registers its project for an environmental assessment, government's expectation is that the company provide a complete and comprehensive assessment of the Project's potential risks and related mitigations. Based on the environmental assessment review, the Minister of Environment has a number of decision options: If the Minister is of the opinion that any adverse effects or significant environmental effects related to the project can be mitigated, then the project is able to proceed. If such effects cannot be mitigated, a project may be rejected. In cases where not enough evidence is provided to determine whether or not there may be adverse effects or significant environmental effects related to a project, the Minister may require more information (in the form of a more information decision, a Focus Report or an Environmental Assessment Report) to be provided to address gaps or deficiencies in the required information.

The purpose of this document is to identify for Northern Pulp the information requirements for the preparation of an EA Report. Northern Pulp is expected to prepare an Environmental Assessment Report that addresses the deficiencies in the information provided to date through the environmental assessment process and which fulfills the intent of the Terms of Reference. The Environmental Assessment Report must consider all the effects that are likely to arise from the Project, including any not explicitly identified in the Terms of Reference. The EA Report will be used to meet the requirements of a provincial Class I Undertaking.

Northern Pulp must include in its EA Report all the information requested within the Terms of Reference, as a minimum, in accordance with the Environmental Assessment Regulations pursuant to Part IV of the Environment Act. The Terms of Reference include Valued Ecosystem Components (VECs) which must be adequately addressed in the EA Report. While the Terms of Reference provide a framework for preparing a complete EA Report, it is the responsibility of the Proponent to provide sufficient data and analysis on any potential environmental effects of the Project to permit a proper evaluation by governments, the Mi'kmaq of Nova Scotia and the public.

The EA Report is expected to provide a comprehensive and complete assessment of the potential effects of the Project, presented in a clear format that can easily be reviewed by the Minister, governments, the

Mi'kmaq of Nova Scotia and the public. If the Minister decides to refer the EA Report to an EA Review Panel for review, the EA Report will serve as the cornerstone of the Panel's review and evaluation of the potential effects of the Project and thus must be a stand-alone document. The EA Report will also allow governments, the Mi'kmaq of Nova Scotia and members of the public to understand the Project, the existing environment, and the potential environmental effects of the Project.

#### 1.3 Proposed Project

This Section is based on the proposed Project as described in the February 2019 Environmental Assessment Registration Document (EARD). In response to this Draft Terms of Reference, Northern Pulp is required to provide information on any changes to the Project as a result of the *Boat Harbour Act* deadline. The Northern Pulp Northern Bleached Softwood Kraft pulp mill is located at Abercrombie Point adjacent to Pictou Harbour in Pictou County, Nova Scotia (NS). The proposed Project consists of the development of a new effluent (wastewater) treatment facility (ETF) constructed on Northern Pulp property, and a transmission pipeline that will carry treated effluent overland and in the marine environment and discharge via an engineered diffuser (marine outfall).

The ETF is proposed to employ the AnoxKaldnes BAS™ Biological Activated Sludge process purchased from Veolia Water Technologies, which combines Moving Bed Biofilm Reactor (MBBR) technology with conventional activated sludge. Once treated onsite at Northern Pulp's facility, effluent is proposed to be sent through an approximately 15 km long pipeline, of which approximately 8.7 km is included in the overland section. An additional land-based section of effluent pipeline, less than 1 km will be installed on mill property as a part of the ETF design by KSH Solutions. Approximately 1.5 km of the treated effluent pipeline will follow a marine crossing in Pictou Harbour adjacent to the Pictou Causeway. The land-based section of the pipeline begins on the north side of Pictou Harbour where it enters the Nova Scotia Department of Transportation and Infrastructure Renewal's (TIR's) Highway 106 right-of-way (ROW) and runs generally north, parallel to Highway 106, along the outermost eastern portion of the ROW toward Caribou, NS. The pipeline will then travel through the marine environment to the proposed outfall location approximately 4.0 km offshore within the Northumberland Strait.

#### 1.4 Environmental Assessment Requirements

The Project is a Class I Undertaking pursuant to Schedule A of the Environmental Assessment Regulations made under Section 49 of the *Environment Act*. In accordance with Section 18(b) of the Environmental Assessment Regulations, the Minister of Environment has determined that an EA Report is required.

The Environmental Assessment Regulations require that the proposed Terms of Reference for the EA Report be prepared by the EA Administrator (Administrator) and made available for public review. Public comments on the Draft Terms of Reference will be accepted from January 8 – February 7, 2020.

All comments will be provided to Northern Pulp within 5 days of the end of the comment period. Northern Pulp will then have 21 days to respond in writing to the comments. Within 14 days from the final date for written response from Northern Pulp, the Final Terms of Reference for the EA Report shall be provided to Northern Pulp.

The Proponent is required to submit the EA Report within 2 years of receipt of the Final Terms of Reference. If the EA Report does not meet the Terms of Reference, Northern Pulp will be required to include further information before the EA Report can be accepted. Upon acceptance of the EA Report,

Nova Scotia Environment (NSE) has 14 days to publish a notice advising the public where the EA Report can be accessed for review and comment.

Once the EA Report has been accepted, the Minister has the option to refer the EA Report to an EA Review Panel for review. At the conclusion of this process, the Minister has 3 decision options: a) the undertaking is approved with conditions; b) the undertaking is approved without conditions; or c) the undertaking is rejected.

#### 1.5 Access to Information for the Environmental Assessment Process

Copies of the Draft Terms of Reference for the Preparation of the EA Report may be examined at the following locations:

- Pictou Library, 40 Water Street, Pictou, NS
- New Glasgow Library, 182 Dalhousie Street, New Glasgow NS
- EA website <a href="https://www.novascotia.ca/nse/ea/">https://www.novascotia.ca/nse/ea/</a>

All information pertaining to this portion of the EA review will be posted to the EA website as it becomes available.

# 2.0 PREPARATION AND PRESENTATION OF THE ENVIRONMENTAL ASSESSMENT REPORT

Pursuant to the Environmental Assessment Regulations, the EA Report must include, but not be limited to, the following information:

- a description of the proposed undertaking;
- the reason for the undertaking;
- other methods of carrying out the undertaking;
- a description of alternatives to the undertaking;
- a description of the environment that might reasonably be affected by the undertaking;
- the environmental effects of the undertaking, including identifying any effects on species at risk, species of conservation concern and their habitats;
- an evaluation of advantages and disadvantages to the environment of the undertaking;
- measures that may be taken to prevent, mitigate or remedy negative environmental effects and maximize the positive environmental effects on the environment;
- a discussion of adverse effects or significant environmental effects which cannot or will not be avoided or mitigated through the application of environmental control technology;
- a program to monitor environmental effects produced by the undertaking during its construction, operation and abandonment phases;
- a program of public information to explain the undertaking; and
- information obtained under subsection 19(2) which the Administrator considers relevant.

The information obtained under subsection 19(2) shall be prepared taking into consideration comments from:

- the public;
- departments of Government;

- the Government of Canada and its agencies;
- municipalities in the vicinity of the undertaking or in which the undertaking is located;
- an affected aboriginal people or cultural community; and
- neighbouring jurisdictions to Nova Scotia in the vicinity of the undertaking.

In preparing the EA Report, Northern Pulp shall refer to comments from the above-noted parties during the EA review of both the EARD and the Focus Report submitted by Northern Pulp to NSE, to identify and include the supplementary information required to provide a comprehensive and complete assessment of the potential effects of the Project. The EA Report must be a stand-alone document that presents a complete discussion and analysis of predicted effects (direct and indirect effects) that is qualitative and quantitative, evidence-based and supported by credible sources of information. This report shall build upon, where appropriate, the science and evidence outlined in the EARD and in the Focus Report. Northern Pulp is expected to prepare an EA Report that fulfils the intent of the Terms of Reference and considers all the effects that are likely to arise from the Project, including those not explicitly identified in the Terms of Reference.

The order in which information is presented is at the discretion of the Proponent; however, a concordance table will be required to indicate where the information can be found. In the event that the Minister has decided to refer the EA Report to an EA Review Panel for review, the Proponent may provide additional information to assist the EA Panel in making their recommendation to the Minister and assist the Minister in making the decision for the Project.

Since the EA Report is intended for public review, the information should include an Executive Summary presented non-technical language. The Proponent will be required to submit an electronic copy of the EA Report in accordance with the EA Branch Bulletin on Requirements for Submitting Electronic Copies of Environmental Assessment (EA) Documents for publication on the Department's website.

The EA Report must include, but not be limited to, the following information, as identified under the corresponding sections.

### 3.0 PROJECT DESCRIPTION

Nova Scotia Environment expects Northern Pulp to provide information, as part of its comment on the draft Terms of Reference, about any anticipated changes to the proposed Project as a result of the *Boat Harbour Act*. Nova Scotia Environment further expects this information to include how these changes, if any, may affect the Terms of Reference.

Describe each component of the Project as it is planned through its full life cycle, including site preparation, construction, commissioning, operation, maintenance, and decommissioning:

- changes to existing mill infrastructure and in-mill improvements;
- effluent treatment facility (ETF);
- land-based sections of pipeline; and
- marine based sections of pipeline and the diffuser.

Where final decisions have not been made in regard to an element of Project design, or several options exist for a particular component or activity, the assessment of effects of that element of the Project on the environment should be conducted at the same level of detail for all available options.

#### 3.1 The Proponent

Outline the Proponent's corporate commitment to sustainable development and environmental protection goals and principles including pertinent corporate policies, programs, plans, strategies, protocols, guidelines, codes, and environmental management systems (EMS).

Provide summary information on the nature of the management structure and organizational accountability for designing, constructing, operating and modifying the Project; implementing environmental mitigation measures and environmental monitoring; and managing potential adverse environmental effects.

Provide details on relevant corporate experience (the Proponent and related companies) and experience in building and operating other similar facilities. Provide a record of the environmental performance and capability of the Proponent in conducting this type of Project.

#### 3.2 Project Location

Provide a concise description of the geographical setting in which the Project is to be constructed/operated. Describe how the Project site was chosen, including a discussion of the specific environmental considerations used in site selection of all Project components, and the advantages of the proposed site. Describe the Project's compatibility with existing local and regional land-use policies and plans, and opportunities to integrate Project planning into regional scale development efforts. Discuss compatibility of the Project location in relation to people and their community and traditional activities and land uses by the Mi'kmaq of Nova Scotia.

Describe the ultimate boundaries of the Project in a regional context including existing and proposed land uses and infrastructure such as road networks, highway realignment, railways, power lines, pipelines, proximity to permanent and seasonal residences, individual and community water supplies, wetlands, water bodies, streams, ecologically sensitive areas, and archaeological sites. Include mapping at an appropriate scale.

Provide details on ownership of property within the Project footprint including lands owned by the Proponent, the Crown, or private lands. Provide details of existing agreements to develop the Project on lands not owned by the Proponent. Provide detailed plans for the required acquisition or use of private lands and Crown Lands and discuss any contingencies should these lands not be available for Project development.

Provide a list and map of communities in the region, including Mi'kmaq communities, potentially affected by the Project and indicate the distance between those communities and the specific Project components as appropriate. Identify proposed local shipping routes for importing and exporting products.

#### 3.3 Project Design and Components

Describe the design plans and appropriate design standards for all Project components, associated and ancillary works, and other characteristics that will assist in understanding the Project, including: changes to existing mill infrastructure and in-mill improvements, ETF, land-based sections of pipeline, and marine based sections of pipeline and the diffuser. All associated infrastructure and components must be detailed. Also discuss environmental controls planned for the Project and how environmental protection, conservation, best management practices (BMPs), and best available technology have been considered in the design.

Provide potential design variations and implications (including advantages or disadvantages to the environment) of those variations. Describe any assumptions which underlie the details of the Project design. Where specific codes of practice, guidelines and policies apply to items to be addressed, those documents shall be cited.

For the EA Report, all site-specific data must be collected using equipment installed, operated, maintained and calibrated as specified by the manufacturer's instructions. All samples are to be collected, preserved and analyzed, by qualified personnel, in accordance with recognized industry standards and procedures and at accredited laboratories. Data shall undergo quality assurance and quality control (QA/QC) processes.

In addition to the above, this section will include, but not be limited to information on the following Project design components:

#### <u>Changes to Existing Mill Infrastructure and In-Mill Improvements</u>

- Preliminary design overview for any in-mill improvement projects necessary to achieve the design assumptions for the Project (e.g., in-mill cooling towers);
- Preliminary design overview of other projects that interact with the performance of the ETF (e.g., oxygen delignification) and a schedule for these projects relative to the proposed ETF construction schedule; and
- A waste dangerous goods management plan to accommodate for worst case scenario within design of the proposed ETF. It is important to note that the ETF is not proposed to treat waste dangerous goods based on the information provided in the EARD and in accordance with requirements of NSE.

#### Effluent Treatment Facility (ETF)

- Footprint, location and preliminary designs for the ETF;
- Equipment description and specifications, including appropriate diagrams and flow charts for the proposed ETF and infrastructure components;
- Details (including characteristics and toxicities) and quantities of all products produced, stored, and imported to and exported from the facility (including by-products and chemical intermediaries);
- Justification of spill basin size and appropriateness of multi-purpose usage. Consider worst-case scenarios and requirements under the Dangerous Goods Management Regulations;
- Proposed design for the spill basin, including but not limited to, management and disposal of contaminated material that may be present at the site, liner details, secondary containment features, clean-out access and connection to the mill infrastructure and ETF;
- Submit additional data regarding the complete physical and chemical characterization of NPNS'
  raw wastewater at Point A (as defined in EARD and Focus Report), to support the assessment of
  the appropriateness of the proposed treatment technology. The sampling data for complete
  characterization (i.e., broad chemical analysis) must be statistically relevant and adequately

- represent ETF influent for various operating conditions that may exist at the mill (e.g., seasonality, flow rates, changes in sources of fibre or production, start-up and shut-down cycles, etc.);
- Using NPNS' raw wastewater characterization results, evaluate all contaminants of potential
  concern (COPCs) with respect to the effluent discharge quality following treatment using the
  proposed technology. This statistically relevant assessment shall include, but not be limited to,
  bench-scale testing of the mill's actual Point A effluent. Provide results of all expected COPCs
  influent and effluent concentration ranges. Include chemical oxygen demand (COD) fractionation
  (soluble and total) concentrations in the assessment;
- Comparison of the effluent characterization results from the above assessment with appropriate regulations and/or guidelines, including the draft Pulp and Paper Effluent Regulations (PPER) daily and monthly average limits;
- Effluent flow data to support the proposed peak treatment capacity of 85,000 m<sup>3</sup> flow of effluent per day using actual daily flow data from Point A over a minimum 1-year period;
- Information regarding how the facility will achieve compliance with COD influent limits once the in-mill changes and ETF are operational; and
- Evaluation of sludge disposal options and management plans, including the rationale for the preferred option. If the preferred option uses the biomass boiler, provide a secondary disposal option.

#### Land-Based Sections of Pipeline Route

- Information on corridor width requirements, accounting for minimal possible corridor width requested by TIR;
- Appropriate, intrusive geotechnical survey results to support proposed pipeline construction methods;
- Risk assessment of pipeline design, including the following:
  - An evaluation of the probability of a potential leak, spill or release from the pipeline installation and its operation, based on a literature review and on comparable design.
  - o Identification of points of the system that are susceptible to failure.
  - Based on the risk assessment, a suitable secondary containment system (e.g., a doublewalled pipeline system) and proposed locations. Secondary containment is at a minimum required within the Town of Pictou's water supply protection area;
- Preferred option(s) for both external and internal leak detection technologies for all sections of
  the on-land pipeline, with specific consideration to any section of the pipeline located in the Town
  of Pictou's water supply protection area and near private supply wells. Identify the corresponding
  sensitivity of instruments, maintenance and staff training plan, inspection frequencies,
  methodologies and response protocols to leaks detected in any part of the pipeline;

- Maps, at an appropriate scale of the Project location and pipeline route that show Project
  components, boundaries with UTM coordinates, major existing infrastructure, important
  environmental features, and adjacent land uses that will intersect with the pipeline route (e.g.,
  road networks, railways, power lines, pipelines, proximity to settled areas, individual and
  community water supplies, watercourses, wetlands, ecologically sensitive areas, priority flora and
  fauna and archaeological sites); and
- A list of all properties (i.e., Parcel Identification Numbers) that will intersect with the pipeline route.

#### Marine Based Sections of Pipeline Route

- Selected options for both external and internal leak detection technologies for marine sections of the pipeline. Identify the corresponding sensitivity of instruments, maintenance and staff training plan, inspection frequencies, methodologies and response protocols to leaks detected in any part of the pipeline; and
- Maps, at an appropriate scale, detailing: the Project location, the Project components (e.g., confirmed locations of marine sections of the proposed pipeline including diffuser), boundaries of the proposed site with UTM coordinates, the major existing infrastructure, adjacent land uses that will intersect with the pipeline route, and important environmental features (e.g., spatial and temporal marine habitat distribution, marine refuge (Scallop Buffer Zone 24), etc.).

#### 3.4 Construction

Describe the construction of all Project components and supporting infrastructure. This will include but not be limited to:

- Proposed construction schedule for all Project components (including those mentioned in Section 3.3 of the Terms of Reference), including days of the week, times of the day, seasonal schedules and anticipated commencement and completion dates;
- All physical works and activities carried out during the construction phase are to be identified and
  described by location. This, includes but is not limited to: clearing and grubbing; blasting; site
  access and roadways; marine construction methods; road construction methods; dangerous
  goods storage areas; disposal at sea; watercourse crossings or diversions; utilities; and description
  of equipment used for construction activities, both terrestrial and marine;
- Dredge management/disposal plans that characterize and quantify marine sediments to be dredged and disposed (or re-used) in accordance with Environment and Climate Change Canada (ECCC) standards and in consultation with relevant government departments. Identify areas where dredging activities will occur and identify the location, quantity and chemistry of any dredge materials that are expected to require land-based disposal;
- Evaluation of pipe jacking feasibility where crossing roads or structure locations that includes
  addressing limitations associated with practical pipe length at crossings and available space for
  thrust/reception pits on either side of crossings;

- Evaluation of the effects of excavating and replacing large rock fill along the alignment route near Harvey A. Veniot Pictou Causeway;
- Storage areas for fuels, explosives and dangerous goods; and
- Waste disposal plans (types of waste, methods of disposal, quantity).

#### 3.5 Operation

Describe the operation of all Project components and supporting infrastructure to all components. The description of the operation shall include but not be limited to the following:

- Routine and maintenance operations for all Project components;
- Environmental controls and BMPs, including pollution prevention techniques in addition to traditional treatment and disposal practices;
- A spill basin management plan that proactively addresses the management of different types of
  materials, including compatible and non-compatible waste dangerous goods, sequential
  spills/leaks/releases, clean-out and liquid/solid removal procedures for the different types of
  collected materials, and appropriate final disposal procedures that observe applicable provincial
  and federal regulations; and
- A plan to ensure adequate staffing and operation oversight of ETF by trained personnel at all times.

#### 3.6 Decommissioning and Reclamation

Describe the proposed plans for decommissioning the Project, including all infrastructure and reclamation of any impacted site. The EA Report shall also discuss the post-decommissioning land use options of the property.

#### 4.0 REGULATORY ENVIRONMENT

Describe the existing regulatory environment (Federal, Provincial and Municipal) including all permitting, licensing and regulatory requirements that apply to all phases of the Project and associated infrastructure. Provide a schedule indicating anticipated dates for required regulatory approvals.

Significant portions of the proposed Project to be evaluated by the EA Report are located on federal lands; therefore, federal authorities have indicated that they must make a determination as to whether the Project is likely to cause significant adverse effects and/or in the case of Public Services and Procurement Canada (PSPC) seek an Order in Council prior to providing authorizations, licenses, or leases. To ensure potential environmental effects are addressed to the satisfaction of federal authorities under Section 82 of the *Impact Assessment Act*, provide all necessary authorizations, licenses, or leases for all applicable federal authorities.

Describe applicable guidelines and standards that would apply to the Project. Those applicable standards or guidelines shall also be referenced in the appropriate sections of the EA Report and linked to environmental protection objectives.

#### 5.0 NEED FOR AND PURPOSE OF THE PROJECT

The need for and purpose of the Project should be established from the perspective of the Proponent. The Project is being designed to meet specific objectives and these objectives should be discussed. If the objectives of the Project are related to or contribute to a larger private or public sector policy, program or plan, this information should be included.

#### 6.0 DESCRIPTION OF ALTERNATIVES TO THE PROJECT

Include an analysis of alternative means of carrying out the Project; describing functionally different ways to meet the Project need and achieve the Project purpose.

#### 7.0 OTHER METHODS FOR CARRYING OUT THE PROJECT

Discuss other methods for meeting the need for the Project, including but not limited to, pipelines and treatment technologies. This section shall also discuss alternate locations for the Project.

The rationale for rejecting other described methods of carrying out the Project must be provided, including a discussion of how environmental sustainability and impact avoidance criteria were applied.

#### 8.0 ASSESSMENT METHODOLOGY

Include the study strategy, methodology and boundaries used for preparing the EA Report. The following must be clearly defined:

- Temporal boundaries (i.e., duration of specific Project activities and potential impacts) for construction and operation through to decommissioning and post-decommissioning;
- Study boundaries or Project area and all space that will be potentially impacted, by the Project as
  proposed, or subject to subsequent modifications, and the methodology used to identify the
  study boundaries;
- Valued Ecosystem Components (VECs) within the study boundaries and the methodology used to identify the VECs. The methodology used for VEC identification shall include input from members of the public, government departments and agencies, other experts, and other interested parties, as well as direct engagement with the Mi'kmaq of Nova Scotia;
- Where appropriate, identify environmental protection objectives (including those contained in applicable legislation or guidelines) associated with each VEC;
- Strategy for investigating the interactions between the Project and each VEC and how that strategy was used to coordinate the individual studies undertaken; and
- Method for predicting and evaluating Project impacts upon the environment; determining necessary avoidance, mitigation, remediation and/or compensation (in this order of consideration); and determining the significance of any residual impacts.

The EA Report is to be prepared using an accepted and proven EA methodology and a qualified person should predict and evaluate Project impacts upon the environment. If there are no predicted effects to a specific VEC, provide reasons to support that claim. A complete discussion and analysis of predicted effects (direct and indirect effects) should be provided that is qualitative and quantitative, evidence-based and supported by credible sources of information. Provide a list of literature and sources used in the preparation of the EA Report.

The following sections outline specific concerns and requirements related to the existing environment, adverse effects and environmental effects assessment, proposed mitigation, residual environmental impacts, proposed compliance and effects monitoring, and the public information program that are to be addressed in the EA Report for the proposed Project.

#### 9.0 EXISTING ENVIRONMENT

Provide a baseline description of the environment in the vicinity of the Project and all other areas that could be impacted by the Project. This description must include the components of the existing environment and environmental processes, their interrelations and interactions, as well as variability in these components, processes and interactions over time scales appropriate to the effects assessment. The Proponent's description of the existing environment shall be in sufficient detail to permit the identification, assessment and evaluation of the significance of potentially adverse environmental effects that may be caused by the Project.

The EA Report shall build upon, where appropriate, the science and evidence outlined in the EARD and in the Focus Report, considering comments on those documents during their respective EA review processes. The EA Report shall be a stand-alone document that presents a complete discussion and analysis of predicted effects (direct and indirect effects) that is qualitative and quantitative, evidence-based and supported by credible sources of information. Supplementary information shall be included to provide a comprehensive and complete assessment of the potential effects and may provide additional information to assist the EA Panel in making their recommendation to the Minister in the case of a panel review and to assist the Minister in making the decision for the Project.

The EA Report shall clearly indicate baseline data/information which is not available or where existing data cannot accurately represent environmental conditions in the Project area. If the background data have been extrapolated or otherwise manipulated to depict environmental conditions in the Project area, modelling methods and equations shall be described and shall include calculations of margins of error.

For the EA Report, the spatial boundaries must include the Project footprint and relevant receiving environments such as airsheds and watersheds. Temporal boundaries must address applicable guidelines, standards and regulatory requirements and include Project construction, operation, decommissioning and post-decommissioning.

The Proponent is encouraged to consult with relevant government departments when determining the need for, extent, methods, and timing of site-specific studies/surveys. Where technical reports are included or referenced, they must be finalized and signed by the qualified individual(s). Also provide the name and credentials of the person(s) conducting baseline studies/surveys. Mapping clearly indicating the extent of studies/surveys, sampling points, and illustrating key findings should also be included and presented logically within the EA Report in a location that allows for ease of review. Wherever possible,

mapping should be presented at common scales and datum to allow for comparison and overlap of mapped features.

The components of the environment to be discussed shall include identified VECs and those indicated within Sections 9.1 - 9.8.

#### 9.1 Geophysical Environment

#### 9.1.1 Topography, Geomorphology and Geology

Topographical maps should be provided locating the Project in both regional and local contexts. Describe the physical geography of the Project study area including post-glaciated landforms, coastal features, and marine features.

#### 9.1.2 Geology

Include a description of bedrock geology, surficial geology and soils. The results of the geotechnical survey referenced in Section 3 of the Terms of Reference should be included. Geological properties of all Project sites in the study area which may influence stability, occupational health and safety, rehabilitation programs, or the quality of discharge water leaving any area disturbed by the Project should be described. The EA Report must consider the potential for Acid Rock Drainage/Metal Leaching (ARD/ML) where new bedrock may be exposed and/or excavated.

The marine component of the Project should also include a discussion pertaining to surficial sediment characteristics and mobility under present and future environmental conditions. This section should also identify any mineral resources that may be impacted by the Project.

#### 9.2 Water Resources

Include a description of groundwater, surface water, marine water and wetland resources potentially affected by the Project.

#### 9.2.1 Groundwater

Provide a description of the regional and local hydrogeology of the study area. A discussion of groundwater use in the study area, including both current and likely potential future uses must be provided. Provide a map showing all water supply wells locations and potentially affected watercourses within 500 metres of the pipeline route.

#### 9.2.2 Surface Water

Provide a general hydrologic, hydraulic and water quality description of all surface water bodies in the study area, including upstream and downstream to all Project components. Existing uses, withdrawal capacities, and users of the watercourses shall be identified, including use by the Mi'kmaq of Nova Scotia.

#### 9.2.3 Marine Water

Provide baseline studies that characterize environmental conditions for the four seasons over a minimum of one year for the marine environment, including: climate, water quantity (e.g., current profiles, wave height, tide levels), water quality (e.g., temperature, salinity, chemical and physical water quality), and marine sediment chemical characterization in the vicinity of proposed marine outfall location. These studies must be to the satisfaction of relevant government departments and are to be used to support modeling activities.

Provide marine sediment chemical characterization along the proposed marine based pipeline section routes. Marine sampling locations must be clearly identified.

Conduct an intrusive marine geotechnical investigation in the areas identified to have potential bedrock of uncertain depth and along proposed route near base of Harvey A. Veniot Pictou Causeway.

Provide an ice scour baseline study for at least two winter seasons.

#### 9.2.4 Wetlands

Identify the location, size and class(es) of any wetland and/or wetland complexes within the predicted zone of influence and conduct a wetland evaluation. Evaluation of the wetlands shall include wildlife habitat potential (including rare and endangered species), groundwater recharge potential, role of the wetland in surface water regulation (stormwater retention and flood control) and the role of the wetland in watershed health. Based on the results of the evaluation, the EA Report must specifically identify wetlands that:

- Support a significant species or species assemblages;
- Support high wildlife value; and/or
- Have high social or cultural importance.

Describe all work activities and predict the effects (direct and indirect), with supporting rationale, on impacted wetland and wetland functions.

Wetland evaluations shall include additional assessment of adjacent wetland areas and anticipated extent of impacts associated with construction activities. The wetland evaluation must include identification of assessment areas and catchment areas used in the evaluation and include any associated outputs or assessment scoring outputs.

Baseline studies must describe and document pre-construction conditions, including, but not limited to, wetland class distribution, vegetation community structure, soil characteristics, and hydrology trends.

#### 9.3 Atmospheric Resources

Atmospheric resources will include ambient air quality, the acoustic environment, greenhouse gas emissions, and impacts on climate.

#### 9.3.1 Climate

Include a discussion of regional climate conditions and meteorology in the vicinity of the Project as well as expected changes over the next 50 years due to climate change. This section should include climate norms, extreme conditions, as well as trends in these conditions and climate change impacts, as well as the effect these changes may have on the Project and plans to mitigate against those impacts.

In addition to historical and projected climate data, the climate sub-section of the existing environment should include a summary of greenhouse gas emission projections for the Project, including plans to mitigate those emissions in both the design and operation.

Please follow the EA guidance documents when completing this section: https://novascotia.ca/nse/ea/docs/Development.Climate.Change.Guide.pdf.

#### 9.3.2 Air Quality

For the study area, provide a review of baseline ambient air quality and meteorological data, including annual and seasonal climatic conditions for the region.

Provide a description of existing ambient air quality conditions for the study area, with particular attention to ambient and peak levels of nitrogen dioxide ( $NO_2$ ), sulfur dioxide ( $SO_2$ ), carbon monoxide (CO), ozone (CO), particulate matter (total suspended particulate (CO), fine particulate matter (diameter less than 2.5 microns) (CO) and coarse particulate matter (diameter less than 10 microns) (CO), total reduced sulphur (CO) and volatile organic compounds (CO) levels.

Discuss the influence of local and regional emission sources and the influence of climate and weather conditions. The data should be used for the development of an appropriate model(s) for the study area to be provided in the EA Report. Also describe any potentially sensitive receptors and/or locations.

#### 9.3.3 Ambient Noise and Light Levels

Describe the existing ambient acoustical environment at the Project site (including the marine environment), and in any other areas where Project activities could be expected to have an environmental effect.

Provide the spatial boundaries of existing noise and vibration levels, as well as locations of recording stations and length of record for any acoustic or vibration data presented. Consider the effects of different meteorological conditions on noise propagation. Provide information on any existing relevant standards, guidelines or objectives with respect to noise and vibration levels.

Describe existing ambient light levels at the Project site and at any other areas where Project activities could have an environmental effect on light levels. Describe night-time illumination levels during different weather conditions and seasons.

#### 9.4 Flora and Fauna

Identify flora, fauna, and habitat types that will be intersected by all components of the Project. Appropriate field surveys agreed to by Nova Scotia Lands and Forestry (NSLAF) – Wildlife Division, shall be conducted as part of the evaluation. Surveys should be described by results, methodology, and spatial and temporal boundaries.

#### 9.4.1 Terrestrial Environment

This section must include, but not be limited to the following:

- Identification of typical species of flora, sensitive flora, flora species-at-risk, and potential habitat for flora species-at-risk in the study area;
- Identification of areas of old growth forest. Current information shall be obtained from NSLAF —
  Wildlife Division; the Atlantic Canada Conservation Data Center; ECCC; the Nova Scotia Museum
  of Natural History, and local naturalists and relevant interest groups. Field surveys and
  investigations required to supplement the available data shall be completed in a manner that is
  acceptable to NSLAF Wildlife Division. Available data, survey results, and detailed mitigation
  measures that demonstrate a special emphasis on avoidance of impacts shall be included in the
  EA Report;

- Identification of any existing or planned wildlife management areas, ecological reserves or wilderness areas as well as managed wetlands and significant wildlife habitat;
- Identify and delineate on a map 'roadless areas' and discuss their potential value to Nova Scotia's
  protected areas network. Include areas with high wildlife concentrations, wildlife corridors or
  habitats rare/unique to Nova Scotia;
- Identification of typical species of fauna (including invertebrate species), sensitive fauna, fauna species-at-risk, and potential habitat for fauna species-at-risk in the study area. Current information shall be obtained from NSLAF Wildlife Division; the Atlantic Canada Conservation Data Center; ECCC; Nova Scotia Communities, Culture and Heritage; the latest Committee on the Status of Endangered Wildlife in Canada (COSEWIC) list; the Atlas of Breeding Birds of the Maritime Provinces; and local naturalists and relevant interest groups. Field surveys and investigations required to supplement the available data shall be completed by professional biologists in a manner that is acceptable to NSLAF Wildlife Division and Canadian Wildlife Service;
- Additional migratory bird surveys at representative survey points along the pipeline route;
- Bird surveys transects to provide a complete view of bird species distribution and habitat use along the pipeline route, including transect bird surveys and fall migratory bird survey.
   Identification of nests of bird species, which are protected under the Wildlife Act, regardless of whether they are active or not must also be considered;
- Bird baseline survey for common nighthawk (*Chordeiles minor*), including rationale for survey point selection to the satisfaction of NSLAF;
- Raptor nest survey to identify nest locations for the entire Project area including the pipeline route;
- Herptile survey for the Project area, which includes the pipeline route, to include both spring and fall survey information. Prior to conducting survey, develop survey methodology in consultation with NSLAF; and
- When surveys are necessary to supplement the available data and adequately describe the use of
  the area by migratory birds during different times of the year (breeding season, migration,
  winter), emphasis will be placed on determining whether any bird species-at-risk, colonial nesting
  species, species particularly vulnerable to habitat fragmentation, etcetera, occur or breed in or
  near the study area.

#### 9.4.2 Freshwater Aquatic and Marine Environment

This section must include, but not be limited to the following:

• Fish and fish habitat baseline surveys for the marine environment;

- Description of any freshwater fish or fish habitat that exists in any identified watercourse or any
  other receiving watercourse that may be impacted by the development. The description of these
  species and habitat should identify any species-at-risk and ecologically sensitive or critical habitat
  and migratory routes of fish;
- Description the relative distribution and abundance of valued fish resource components within the predicted zone of influence. Fish species, age, health, and diversity shall be described;
- Description of any seasonal variation in the location, abundance and activities of aquatic species should be included. Describe and identify key habitat features, such as spawning, rearing, nursery, feeding, migration and overwintering areas, as they occur within the Project area. Also describe the criteria utilized for determining the zone of influence this Project has on the fish habitat;
- Description of the marine habitat and species of fish, including pelagic and demersal finfish, shellfish, crustaceans, and marine mammals, likely to be present within the surrounding marine environment. The description of these species and habitats should identify any species-at-risk and ecologically sensitive or critical habitat and migratory routes of fish and marine mammals;
- Baseline data for existing mercury concentrations in fish tissue that are adequate to be used for comparison purposes for impact monitoring programs. Provide data on total mercury in whole fillets accompanied by fish species and size data; and
- Baseline study for fish and shellfish tissue with chemical analysis that includes COPCs of representative key marine species important for commercial, recreational and Aboriginal fisheries (food, social and ceremonial) in the vicinity of the proposed effluent pipeline and diffuser location. The locations of samples must be clearly identified.

#### 9.5 Agriculture, Aquaculture and Forestry Resources

Identify and describe agricultural resources in the study area. Identify agricultural operations in the study area and describe crop types, growing seasons and growing methods.

Describe all commercial, recreational and Aboriginal fisheries (including food social ceremonial (FSC) as well as commercial), aquaculture, and harvesting (e.g., marine plants, shellfish) in the study area. Describe the commercial and recreational species, caught, grown or harvested, and their economic importance. Identify fishing, aquaculture and harvesting locations, the amount caught, and methods used.

Identify and describe forestry activities in the study area.

#### 9.6 Socio-Economic Conditions

Describe the current socio-economic conditions of the study area, including population demographics and economic conditions (including Aboriginal Peoples). Provide details of employment rates and trends at the municipal and regional level. The spatial boundaries of this analysis should include areas within which employees of the Project are expected to reside. Identify key industries in the region (both land-based and marine-based) and describe their contribution to the local and regional economies. Provide details of residential and commercial property values. Describe any local and regional economic development goals

and objectives identified through community consultation, or existing economic development plans and strategies.

#### 9.7 Existing and Planned Land Uses

Describe the patterns of current and planned land use and settlement in the study area including residential, industrial, agricultural, parks, and protected areas. Provide details of areas under existing mineral exploration licenses as well as areas licensed for pulpwood harvesting. Identify locations of abandoned mine workings, mine tailings and waste rock disposal areas, as well as contaminated sites. This section shall include map(s) to illustrate land uses and provide distances to significant settlements.

The EA Report must also identify lands and resources of special social, cultural or spiritual value to the Mi'kmaq of Nova Scotia, with particular emphasis on any current use of land for traditional purposes. A Mi'kmaq Ecological Knowledge Study (MEKS) should be used to identify land and resource use that have and/or continue to be pursued by the Mi'kmaq of Nova Scotia.

#### 9.8 Archaeological Resources

Identify any areas containing features of historical, paleontological, cultural or archaeological importance in a manner acceptable to the Nova Scotia Communities, Culture and Heritage (CCH). Describe the nature of the features located in those areas. Particular attention shall be given to Mi'kmaq of Nova Scotia archaeological sites and burial sites. All heritage research permits acquired, and engagement with the Mi'kmaq of Nova Scotia during this analysis should be identified in the document. Results of the Archaeological Resource Impact Assessment reports related to Indigenous land use and known archaeological sites of interest to the Mi'kmaq, should be provided to the Office of Aboriginal Affairs and PLFN.

#### 10.0 ADVERSE EFFECTS AND ENVIRONMENTAL EFFECTS ASSESSMENT

Describe the effects of the Project on the environment during all phases of the Project (construction, operation, and decommissioning and reclamation), including any environmental change on health, socio-economic conditions, archaeology, and the current use of land for traditional purposes by the Mi'kmaq of Nova Scotia. The EA Report shall identify and describe the accidents and/or malfunctions that may occur during all phases of the Project and assess the effects on VECs.

Provide a detailed contingency plan that considers site-specific conditions and sensitivities, the lifespan of different components and includes, but is not limited to:

- Full hazard identification and qualitative risk assessment associated with Project construction and operation, including those which have or may have an environmental impact (directly or indirectly);
- Prevention, mitigation and contingency measures to mitigate potential Project impacts;
- Discussion of measures to mitigate potential impacts or damages on the environment, properties and human health (e.g., liability insurance, financial security, etc.);
- Emergency response procedures;

- Description and quantification of releases that could occur under both normal conditions and a 'worst-case scenario';
- Description the types, fate and distribution of contaminants within the study area under normal and worst-case scenarios during construction, operations and post-reclamation;
- Discussion of potential Project impacts on emergency and health services in communities near the Project area, and associated mitigation and contingency measures in the events of major Project related accidents and malfunctions;
- Description of the cumulative effects of Project activities; and
- The effects assessment shall also consider impacts of the environment (including weather and climate) on the Project, including a discussion of how potential climate change will impact all components of the Project.

#### 10.1 Geophysical Environment

Potential effects of the Project on the geophysical environment must be discussed in the EA Report.

The EA Report must also discuss the potential cumulative and residual effects of the Project on the geophysical environment and the significance of these effects.

#### 10.2 Water Resources

In conducting the effects assessment on water resources, the EA Report must identify and evaluate:

- Changes in groundwater and surface water quality as a result of effluent discharges from the Project site;
- Potential effects on groundwater quality and quantity and associated impacts to users of groundwater;
- Potential cumulative and residual effects of the Project on water resources and the significance
  of these effects including ecosystem integrity and changes in hydrology to areas immediately
  adjacent to the Project area;
- Where wetland avoidance is not possible, the EA Report must discuss wetland specific construction activities (including trench dewatering, surface water diversions and maintenance of hydrologic connection of wetland complexes), proposed mitigations and anticipated impact on wetland area and function.
- The Canadian Council for Ministers of the Environment (CCME) Water Quality Guidelines with background water quality results shall be used to ensure the protection of relevant water uses (aquatic life, recreational use, agricultural use, and drinking water supply) and shall be used as the basis for evaluating the significance of the predicted impacts; and

• It is recommended Health Canada's Guidance for Evaluating Human Health Impacts in Environmental Assessment: Water Quality, be reviewed and applied in the evaluation where relevant.

#### 10.2.1 Groundwater

Provide an assessment of the potential risk to groundwater resources associated with the construction and operation of the pipeline. The assessment shall include but is not limited to quantitative calculation of time of travel between the pipeline and water supply wells and watercourses, delineation of well capture zones and determination of groundwater flow directions. The results of this assessment shall be considered in the final pipeline design in terms of providing for greater protection in areas of greatest risk.

The groundwater assessment results need to be discussed with the Town of Pictou to establish confidence that the risk of negative impacts to the Town water supply has been reduced to an acceptable level.

#### 10.2.2 Surface Water

In conducting the effects assessment on surface water resources, the EA Report must identify and evaluate:

• Potential effects to surface water quality on fish and fish habitat, community water supplies (protected and unprotected), and recreational and agricultural users.

#### 10.2.3 Marine

The proponent is encouraged to consult with relevant government departments when determining the need for, extent, methods, and timing of site-specific studies/surveys. In conducting the effects assessment on marine resources, the EA Report must identify and evaluate, to the satisfaction of relevant government departments:

- Marine pipeline construction methods along the full route and construction requirements (e.g., blasting), using results from geotechnical investigations;
- Adequacy of proposed pipeline burial depths with respect to ice scour;
- Geotechnical assessment of stability of underwater excavation works near base of Causeway with respect to causeway embankment and structures;
- Potential risk of impacts to the marine environment resulting from leaks from marine based sections of pipeline;
- Receiving water study that assesses fate and transport of COPCs in the receiving water environment for a range of scenarios reflective of conditions possible at the chosen site. This study shall identify potential short and long-term impacts. This study is to be completed using modelling techniques and scenarios for all COPCs in the receiving environment, based on the results of the effluent characterization in Section 3.6 of the Terms of Reference and other relevant studies, such as Human Health Risk Assessment. All baseline climate and marine water quantity and quality data should be applied to this study for model setup, calibration and validation. Results shall include, but not be limit to, discharge plume dimensions and dilution ratios;

- Goodness of Fit statistical procedures are to be applied to evaluate model adequacy in representing the receiving water environment for the calibration and validation periods. Assessment must be provided on the adequacy of the seasonal variation and lengths of observed datasets used in model setup and calibration/validation. A summary of model confidence in adequately representing multi-year effluent discharge transportation of COPCs and accretion/build-up within the receiving water environment is to be included;
- Potential build-up of COPCs resulting from the proposed activity (e.g., shoreline accumulation).
   Provide the estimated dilution potentials at various distances from the diffusers based on calibrated model results as appropriate;
- In conjunction with the above, provide sediment transport modelling, including model(s) and scenarios to assess the impacts of sediment transport within near-field and far-field model areas. The results of the modelling activities are to be assessed with respect to chemical and physical characterization of the distributed solids, interaction with marine sediments and waters, and effects within the marine environment, particularly to marine organisms; and
- Based on the results of the receiving water study, evaluate whether colour is expected to be
  visible at the ocean surface above the diffuser site, including influence of in-water reactions (e.g.,
  potential stratification of the water column) on colour levels. Assess impact of colour and its
  interaction and effect on the marine sediments and associated marine life.

#### 10.2.4 Wetlands

In conducting the effects assessment on wetlands, the EA Report must identify and evaluate:

- Potential direct and indirect impacts to wetlands and how Project development will adhere to the Nova Scotia Wetland Conservation Policy; and
- Where wetland avoidance is not possible, discuss wetland specific construction activities (including trench dewatering, surface water diversions and maintenance of hydrologic connection of wetland complexes), proposed mitigations and anticipated impact on wetland area and function.

#### 10.3 Atmospheric Resources

Describe the sources, types and estimated quantities of air emissions from the mill facility for all potential air contaminants of concern related to the Project under routine conditions and in the case of malfunctions and accidental events on a seasonal and annual basis. Air contaminants to be evaluated should include but not be limited to, impacts of CO, hydrogen sulphide (H<sub>2</sub>S), nitrogen oxides (expressed as nitrogen dioxide)(NO<sub>2</sub>), O<sub>3</sub>, SO<sub>2</sub>, TSP, PM<sub>2.5</sub>, PM<sub>10</sub>, TRS, speciated VOCs, semivolatile VOCs, polycyclic aromatic hydrocarbons (PAHs) and metals. The description shall include appropriate models based on known or measured atmospheric conditions throughout the year.

For all Project phases, construction, operation and decommissioning, estimate the GHG emissions and provide an inventory of GHG emissions from all Project components. This includes carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O) chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs),

sulfur hexafluoride (SF6), nitrogen trifluoride (NF3) and conversion of these emissions to an equivalent amount of CO2. Also include an inventory of the precursors or tropospheric ozone (CO, NOx, and VOCs).

Where possible, include a comparison of the above information with estimates of total GHG contributions from NS, and from similar facilities in Canada. The EA Report must also include a discussion of measures that have been considered and/or are proposed to reduce air emissions and reduce or offset GHG emissions.

While considering the effects on air quality, the EA Report must discuss the potential impacts of predicted increases in noise and light levels during all phases of the Project, on surrounding residential, commercial, recreational and institutional areas, and marine and terrestrial habitats.

It is recommended Health Canada's Guidance for Evaluating Human Health Impacts in Environmental Assessment: Air and Noise, be reviewed and applied in the evaluation where relevant.

In addition, based on concerns raised by government reviewers, the EA Report must also include, but not be limited to the following additional items:

Revised air dispersion modelling including the following:

- Consideration of the effects of fumigation and coastal interaction in the modelling;
- Modelling based on the operating scenario for the occasion when the highest concentration
  of an air contaminant occurs at ground level. The operating condition that corresponds to the
  maximum air contaminant concentration at ground level may occur when the facility is at the
  maximum production level or running at a lower production level or when the process is in
  transition. The report shall include a description of the operating conditions that result in the
  maximum ground level concentration of an air contaminant;
- Identification of individual emission rates as measured or estimated and include the reference and justification for values used;
- Comparison of the maximum predicted ground level concentrations of all contaminants with relevant ambient air quality criteria. In the absence of NS adopted ambient air quality criteria, the Proponent shall utilize criteria from Federal or other Provincial jurisdictions;
- Comparison of the maximum predicted ground level concentrations of all contaminants with their relevant upper risk thresholds;
- Risk assessment and mitigation plan for contaminants that demonstrate a predicted exceedance of a relevant upper risk threshold;
- Inclusion of isopleth mapping for all contaminants predicted to exceed relevant ambient air quality criteria;
- Identification of discrete receptors on all isopleth mapping;
- Mitigation options to address any predicted exceedances of relevant ambient air quality criteria used in the modelling. The model shall be rerun incorporating the mitigation projects to demonstrate no predicted exceedances; and

• Implementation schedule for potential mitigation options.

#### 10.4 Flora and Fauna

#### 10.4.1 Terrestrial Environment

Identify and evaluate the potential effects on flora and fauna and avifauna species/communities during all phases of the Project. Include a full account of impacts on species at risk or of concern, significant habitats and protected areas or areas of potential value to Nova Scotia's protected areas network that may be potentially disturbed, altered or removed. The effects assessment must also consider the potential for effects to flora and fauna associated with landscape fragmentation and sensory disturbances.

#### 10.4.2 Freshwater Aquatic and Marine Environment

Evaluate the potential effects on aquatic environments, including fish and fish habitat.

While considering the effects that the Project may have on freshwater and marine species, include a full account species at risk or of concern and significant habitats. This section must include activities that may affect avifauna in the aquatic environments. Also consider potential effects to marine species from blasting, dredging and other marine construction, as well as vessel traffic and Project operation. Where impacts to fish habitat cannot be avoided or mitigated, discuss compensation measures to ensure impacts are offset.

Assessment of COPCs in the baseline fish and shellfish populations and potential effects due to expected discharge quality.

Include a summary of the potential effects on flora/fauna known to be important to the Mi'kmaq of Nova Scotia.

#### 10.5 Agriculture, Aquaculture and Forestry Resources

Include an effects assessment of the Project on existing and future agriculture activity within the study area.

Assess the impacts on commercial/recreational fishing, aquaculture or other marine harvesting which may be impacted by the proposed Project. The effects assessment should consider changes in commercial/recreational fishing, aquaculture or other marine harvesting species, including contamination of species consumed by people as a result of increased erosion, sedimentation and from effluent discharges from the Project, displacement, mortality or loss and/or alteration of habitat. Also discuss navigation restrictions and loss of traditional fishing areas of the Mi'kmag of Nova Scotia.

Conduct an impact assessment of treated effluent on representative key marine fish species important for commercial, recreational and Aboriginal fisheries. This must be based upon information, studies and an understanding of expected movement of contaminants according to the revised receiving water study. Based on the assessment of applicability of Point C representing Project ETF effluent quality, chronic and acute toxicity testing of non-diluted treated effluent is to be conducted through a series of controlled laboratory experiments. Species used in the assessment should be applicable to the receiving water environment. Consideration should be given to using either the plant's current effluent or another acceptable and representative substitute. The selection of information sources, representative marine species and assessment methodology must first be agreed upon by relevant government departments.

Undertake a model-based evaluation of the chronic effects of thermal cooling water discharge on fish and fish habitat in the receiving water. Based on the results of the evaluation, develop appropriate mitigation measures and/or project changes.

The EA Report must include a discussion on the potential effects on any forestry resources within the Project area.

#### 10.6 Human Health

Provide the completed Human Health Risk Assessment (HHRA) in accordance with Health Canada's Guidance for Evaluating Human Health Impacts in Environmental Assessments: Human Health Risk Assessment and other Guidance for Evaluating Human Health Impacts in Environmental Assessment documents for noise, air quality, drinking and recreational water, etc. as applicable. Federal contaminated sites guidance documents such as the Detailed Quantitative Risk Assessment (DQRA) may be used to supplement the EA Guidance documents where appropriate. The risk assessment must consider human consumption of fish and other seafood, consumption of potentially contaminated drinking water, exposure to recreational water and sediment, outdoor air inhalation, and any other potential exposure pathways. The analysis must inform the identification of contaminants of concern and updating of the receiving water study.

The HHRA must consider baseline data and represent all marine species which are harvested and consumed in the area with respect to the marine component of the Project and in all types of fisheries-commercial, food, social and ceremonial. In addition, information for these species should be included in the baseline studies for COPCs in marine organism tissues where possible. The HHRA must consider bioaccumulation and the potential for biomagnification in the food chain. The exposure route associated with consumption of seaweed and sea vegetables must also be included.

The HHRA is to include appropriate receiving water study and associated modelling activity results (e.g., contaminant fate and transport) as to accurately assess the potential risk to human health.

Include monitoring and mitigation measures for elevated COPCs in air emissions in HHRA problem formulation.

Screen COPCs in Project effluent discharge according to guidance from Health Canada. Incorporate findings from receiving water study. Discuss the potential for interactive effects from similarly acting chemicals. Include an evaluation of the risk associated with exposure to chemical mixtures. Provide calculation of Hazard Quotients (HQ) and Incremental Lifetime Cancer Risk (ILCR) which account for additivity.

Ensure any screening values used from the EPA are adjusted to be consistent with the health protection endpoints prescribed by Health Canada and CCME.

Provide clarification on methodology applied to selection of COPCs for seafood ingestion in consultation with Health Canada.

#### 10.7 Socio-Economic Conditions

Identify potential impacts of the Project on economic conditions, populations and employment.

Identify potential impacts of the proposed Project on residential property values and property demand during all phases of the Project (including temporary accommodation required during construction).

Describe the effect of the proposed Project on present and future commercial, residential, institutional, recreational and resource land uses within the study area, including impacts to areas under mineral exploration licenses or forestry licenses.

Identify the potential impact on recreational opportunities, including the effects on aesthetics from areas surrounding the Project area. This analysis should be supported by visual impact assessments from both the land and water.

Identify the potential impact on the current use of land and resources for traditional purposes and any Aboriginal specific land claims within the study area.

While considering the effects on economic conditions and employment, include a discussion on expenditures and the anticipated direct and indirect employment positions that will be created during all phases of the Project.

#### 10.8 Existing and Planned Land Uses

The EA Report must consider the effects that may restrict the ability of people to use and enjoy adjacent lands and marine area presently, and in the future. Describe the potential impacts from existing or planned land uses in the study area. This shall include a discussion of Project interactions with any rural planning initiatives, parks, protected areas, contaminated sites, former mine workings, and mine disposal areas.

Identify and evaluate potential effects on traditional and current recreational and commercial use by the Mi'kmaq of Nova Scotia.

Discuss the anticipated changes in traffic density and patterns during all phases of the Project including the effects on transportation.

While assessing the effects on navigation and navigable waters, consider navigation patterns of all waters that may be impacted by the Project. Potential effects on traditional and current recreational and commercial use must be identified and evaluated.

#### 10.9 Archaeological Resources

Evaluate the potential effects of any changes in the environment as a result of Project activities on physical and cultural resources, structures and/or sites of historic, archaeological, or paleontological significance.

In conducting the effects assessment on archaeological resources, it is recommended that the Proponent consult with CCH and with the Archaeology Research Division of KMKNO.

#### 11.0 PROPOSED MITIGATION

Describe all measures that have, or will be, taken to avoid or mitigate negative impacts, and maximize the positive environmental effects of the Project (as described in Section 9.0 of the Terms of Reference). Mitigation includes the elimination, reduction or control of the adverse effects or the significant environmental effects of the Project and may include restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means.

Describe proposed compensation that will be provided when environmental damage is unavoidable or cannot be adequately mitigated by any other means.

In considering mitigation measures to be employed, the EA Report must describe any legislation, regulations, guidelines, policies, BMPs, and specifications that will be adhered to during construction and operation of the facility that will lead to mitigation of environmental impacts.

#### 11.1 Geophysical Environment

If applicable, describe alternatives to disrupting net acid producing bedrock. When no practical alternative to exposing acid producing bedrock exists, mitigation plans shall be developed for minimizing the impacts on the aquatic environment. Discuss commitments to provide contingency and remediation plans for watercourses that have been degraded due to the disturbance of net acid producing bedrock or tills.

If contaminated soils are to be disturbed, discuss methods to minimize adverse impacts.

Provide applicable mitigation measures and preliminary agreements and plans that meet Provincial regulatory disposal and transportation requirements for potential dredge materials.

#### 11.2 Water Resources

#### 11.2.1 Groundwater Quality and Quantity

Describe actions that will be taken to mitigate any negative impacts on groundwater quality and quantity.

Provide a Groundwater Protection Plan based on the assessment of risks to local water supplies (municipal and private) and the environment. This plan should include management/contingency response actions and reference the groundwater monitoring plan as well.

Describe measures to be employed in the event of accidental contamination or dewatering of any water supply wells as a result of the construction or operation of the Project, including compensation for loss or degradation of water supplies. Describe mitigation measures planned to prevent and remediate contamination of groundwater from the accidental release of a hazardous substance.

Discuss commitments to provide contingency and remediation plans for any contamination of groundwater resources, including decrease of water quality.

#### 11.2.2 Surface Water Quality and Quantity

Describe all mitigation measures that will be used in construction, operation and decommissioning phases of the Project to reduce impacts to surface water resources, including but not limited to erosion and runoff control features and storm drainage management.

Discuss all mitigation measures planned to prevent the release of hazardous substances into local surface waters.

Discuss commitments to provide contingency and remediation plans for any impact to surface water resources, including decrease of water quality or quantity.

#### 11.2.3 Marine Water Quality and Quantity

Describe all mitigation measures that will be used in construction, operation and decommissioning phases of the Project to reduce impacts to marine water resources.

Discuss all mitigation measures planned to prevent the release of hazardous substances into marine waters.

Discuss commitments to provide contingency and remediation plans for any impact to marine water resources, including decrease of water quality or quantity.

#### 11.2.4 Wetland Resources

Describe measures to avoid, minimize or otherwise mitigate effects on wetland resources within the Project area. Specifically, the EA Report must describe measures to maintain ecological and hydrological integrity of any wetlands in the area. Where avoidance is not possible, provide wetland specific mitigations proposed to lessen impacts of the Project at all stages and describe commitments to monitoring and compensation for any loss of wetland habitat. Also provide discussion and commitment regarding remediation/rehabilitation of aquatic habitat as a result of incidental releases of treated effluent in wetlands.

#### 11.3 Atmospheric Resources

Describe measures to avoid, minimize or otherwise mitigate effects on biological receptors during all phases of the Project (vegetation, fish, wildlife, and human health).

Specifically, describe measures that will be taken to control emissions including but not limited to CO,  $H_2S$ , nitrogen oxides expressed as  $NO_2$ ,  $O_3$ ,  $SO_2$ , TSP,  $PM_{2.5}$  and  $PM_{10}$ , TRS, speciated VOCs, semivolatile VOCs, PAHs and metals. Describe any GHG mitigation plans.

Describe all measures that will be taken to mitigate any potential increase in noise and light levels during construction and operation.

#### 11.4 Flora and Fauna

#### 11.4.1 Terrestrial Environment

Discuss measures that will be taken to minimize the impacts of the Project construction and operation on flora species. Include any landscaping plans for preservation of existing vegetation.

Describe the measures that will be taken to minimize the impacts of the Project at all stages on terrestrial fauna and avifauna. Include any plans for preservation of existing habitat and compensation for loss or degradation of terrestrial habitat (i.e., habitat rehabilitation/replacement). Measures to comply with wildlife legislation (e.g., *Migratory Birds Convention Act* and regulations) should also be provided.

Discuss commitments to provide contingency and remediation plans for impacts to terrestrial habitat as a result of accidental events.

In addition, based on concerns raised by government reviewers during the review of the EARD and the Focus Report, the EA Report must also include, but not be limited to the following additional items:

- Mitigation plan developed in consultation with NSLAF that includes additional details to protect
  wildlife and wildlife habitat, including birds, mammals, herptiles, raptors, and species and risk.
  The plan must include but not be limited to the following:
  - a) mitigation measures that will be taken to avoid destroying rare priority species detected in the 2019 floristic surveys;
  - b) mitigation and monitoring plan for the Eastern Wood-Pewee (*Contopus virens*, SARA Special Concern, NSESA Vulnerable) and Barn Swallow (*Hirundo rustica*, SARA Threatened, NSESA

Endangered) found during the course of field surveys and Kildeer (*Charadrius vociferous*) identified to likely be breeding in the Project area, in consultation with both ECCC and NSLAF;

- c) additional details on how impacts to the Double-Crested Cormorant (*Phalacrocorax auratus*)
   colony located along the east side of Highway 106 causeway will be mitigated during
   installation of the pipeline across Pictou Harbour. Identify appropriate mitigation measures
   to protect Double-crested Cormorant nests in the event of a pipeline rupture;
- d) specific measures to be developed to discourage waterfowl from accessing the spill basin and other open ETF components;
- e) specific measure to be developed to control of spread of invasive species;
- f) specific measures to be developed to address potential foraging and overwintering habitat for turtles; and
- g) a training program for field staff to enable them to recognize the potential for species occurrences and procedures to follow.

#### 11.4.2 Freshwater Aquatic and Marine Environment

Discuss measures that will be taken to minimize the impacts of the Project construction and operation on marine and freshwater aquatic species, avifauna and their habitats. Include any plans for preservation of existing habitat and compensation for loss or degradation of aquatic habitat.

Describe the measures that will be taken to minimize the introduction of non-native species to the area.

Discuss commitments to provide contingency and remediation plans for impacts to aquatic habitat as a result of accidental events.

#### 11.5 Agriculture, Aquaculture and Forestry Resources

Discuss measures that will be taken to minimize the impacts of the Project on agriculture, fishing, aquaculture, marine harvesting, and forestry.

#### 11.6 Human Health

Provide suitable avoidance and/or mitigation measures to prevent and minimize potential Project impacts on human health.

#### 11.6 Socio-Economic Conditions

Describe actions that will be taken to mitigate adverse impacts on private and commercial property, existing industry and businesses, planned land use, recreation and other human activities, including traditional activities and land uses by the Mi'kmaq of Nova Scotia.

Provide a dispute resolution policy for addressing Project related complaints and concerns that may be received throughout construction, operation, decommissioning and reclamation, and post-decommissioning.

#### 11.7 Existing and Planned Land Uses

Describe the measures planned to minimize the potential impacts of the Project on existing and planned land uses.

Discuss the mitigation measures planned to address anticipated impacts from any predicted changes in traffic speed, traffic routes, marine navigation, exclusion zones and density in adjacent residential and commercial areas.

#### 11.8 Archaeological Resources

Describe mitigation measures to preserve, protect, or recover any resources of cultural or archaeological value that are identified in the study area.

#### 12.0 RESIDUAL EFFECTS AND ENVIRONMENTAL EFFECTS

This section of EA Report shall list and contain a detailed discussion and evaluation of the residual impacts for each VEC, including the criteria for determining significance. Residual impacts are those adverse effects or significant environmental effects which cannot or will not be avoided or mitigated through the application of environmental control technologies or other acceptable means. Those impacts that can be mitigated or avoided shall be clearly distinguished from those impacts that will not be mitigated or avoided.

These impacts become important in the evaluation of a proposed Project as they represent the environmental cost of the Project.

# 13.0 EVALUATION OF THE ADVANTAGES AND DISADVANTAGES TO THE ENVIRONMENT

Present an overall evaluation of the advantages and disadvantages to the environment, including the VECs, during the construction, operation and decommissioning phases of the Project. The evaluation of the disadvantages shall include an examination and justification of each disadvantage.

#### 14.0 PROPOSED COMPLIANCE AND EFFECTS MONITORING PROGRAMS

Include a framework upon which compliance and effects monitoring will be based throughout the life of the proposed Project, including decommissioning and post-decommissioning activities. Monitoring programs must be designed to determine the effectiveness of the implemented mitigation measures. The EA Report shall describe the compliance reporting methods to be used, including reporting frequency, duration, methods, parameters, comparison standards or guidelines, format, and receiving agencies. Mapping clearly illustrating baseline and proposed monitoring locations should also be included.

Recognizing that the effectiveness of compliance and effects monitoring depends on a workforce that can identify and address potential impacts during construction and operation of the Project, the framework shall include procedures for providing training and orientation to on site employees during construction and operation of the Project.

The description of the compliance and effects monitoring program shall also include any procedures/plans for addressing potential exceedances of environmental protection standards, guidelines or approvals.

The discussion of compliance monitoring shall include, but not be limited to Sections 14.1 - 14.4.

#### 14.1 Geophysical Environment

Describe plans and procedures for assessing ARD potential and associated monitoring in the event of disturbance or exposure.

#### 14.2 Water Resources

Wetland specific post construction monitoring and comparison to baseline condition must be provided to identify post-construction wetland indicator performance and adaptive management to address impacts at all project stages. The report should address compensation measures that may be required to ensure no net loss of wetland area and functions.

Submit a groundwater quality and level monitoring plan for the construction, operation and decommissioning phases of the Project, including the pipeline route and mill site location. This is to include the location of monitoring wells, monitoring sampling frequency and monitoring parameters. The plan must consider the final pipeline design as well as the potential risk to the environment and local water supplies as a result of pipeline construction and possible pipeline leak. The plan must address, as a minimum, sensitive areas along the pipeline route, such as shallow water table intersecting surface water features, proximity to water supply wells and areas along the pipeline more susceptible to failure. Locations where the pipeline may be constructed below the seasonal high-water table shall be identified.

Discuss plans for a survey of structures if blasting is planned, to include wells, building foundations, etcetera, which may experience damage or impact due to seismic vibrations or air concussion.

Discuss any surface water monitoring plans for the construction, operation and decommissioning phases of the Project, including both water quality and quantity aspects.

Develop a marine discharge plume delineation monitoring program to confirm plume dimensions, and effluent concentrations and characteristics in support of the Environmental Effects Monitoring program.

#### 14.3 Fish and Fish Habitat

Submit an Environmental Effects Monitoring program that includes water quality, sediment and tissue sampling and is based on the results of various relevant baseline studies and receiving water study. The program should at a minimum be designed based on applicable regulatory requirements.

#### 14.4 Atmospheric Resources

Complete an ambient air quality monitoring plan, acceptable to the Department, based on the results of the air dispersion modelling. This plan must include but not be limited to sampling locations, parameters, monitoring methods, protocols and frequency. The plan shall ensure adequate monitoring coverage of areas where predicted levels of air contaminants are elevated.

Describe plans for GHG monitoring, reduction targets and reduction plans.

Discuss the plans for monitoring baseline, construction and operational noise levels at the site, and at any residential or commercial areas near the Project.

#### 14.5 Human Health

Provide suitable monitoring measures to confirm impact predictions. Where monitoring is proposed, include a plan for reporting/communicating reporting exceedances of relevant guidelines/thresholds.

#### 14.5 Other Monitoring Plans

Include any other monitoring plan which may include an Environmental Protection Plan or other guidelines, polices or plans, proposed for the construction, operation and decommissioning of the Project.

#### 15.0 CONSULTATION PROGRAM

A Notice regarding the Draft Terms of Reference for Preparation of an Environmental Assessment Report pursuant to the Nova Scotia *Environment Act* was published in the Chronicle Herald and Royal Gazette on January 8, 2020 and posted on the NSE internet site (www.gov.ns.ca/nse/ea/). Information pertaining to this EA will be available on this site.

The Class I EA process for the Project includes the following opportunities to participate (specifically government departments/agencies, the Mi'kmaq of Nova Scotia and the general public will be invited to provide comments):

- the Draft Terms of Reference; and
- the Environmental Assessment (EA) Report.

#### 15.1 Public Consultation

For any consultation undertaken with the general public, the EA Report must describe ongoing and proposed consultation and information sessions.

Describe all steps taken by the Proponent to identify the concerns of the public about the adverse effects or environmental effects of the Project. It shall provide a summary of all concerns expressed by the public and all steps taken by the Proponent to address these concerns. Moreover, the EA Report must describe any outstanding concerns.

The EA Report will also provide details of efforts made to distribute Project information and provide a description of the information and materials distributed to inform the general public.

#### 15.2 Consultation with the Mi'kmaq of Nova Scotia

To assist the provincial Government in their consultation process with the Mi'kmaq of Nova Scotia, the EA Report must describe all steps taken by the Proponent to identify the concerns of Mi'kmaq of Nova Scotia about the adverse effects or environmental effects of the Project. It shall provide a summary of all concerns expressed by the Mi'kmaq of Nova Scotia and all steps taken by the Proponent to address these concerns. Moreover, the EA Report must describe any outstanding concerns.

During the EA process, NSE will serve as the provincial Crown consultation coordinator.

The EA Report will also provide details of efforts made to distribute Project information and provide a description of the information and materials distributed to inform the Mi'kmaq of Nova Scotia.

In parallel to Proponent engagement with the Mi'kmaq of Nova Scotia, the Government of Nova Scotia will undertake continued consultation directly with the Mi'kmaq of Nova Scotia pursuant to the Mi'kmaq-Nova Scotia-Canada Consultation Process (2010).

The Proponent is encouraged to engage the Mi'kmaq of Nova Scotia as referenced in the Nova Scotia Office of Aboriginal Affairs' Proponent's Guide: The Role of Proponents in Crown Consultation with the Mi'kmaq of Nova Scotia (2011).

Include any plans for ongoing community consultation or formation of a community liaison committee (CLC) during construction, operation and decommissioning.

### 16.0 ASSESSMENT SUMMARY AND CONCLUSION

This section of the EA Report shall summarize the overall findings of the EA with emphasis on the main environmental issues identified and predict the significance of adverse environmental effects of the Project.

