DRAFT TERMS OF REFERENCE FOR THE PREPARATION OF AN ENVIRONMENTAL ASSESSMENT REPORT

Mill Transformation and Effluent Treatment Facility Project Proposed by Northern Pulp Nova Scotia Corporation

NOVA SCOTIA ENVIRONMENT AND CLIMATE CHANGE
December 21, 2021

Executive Summary

Background

Environmental Assessment

An Environmental Assessment is a planning tool that allows 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.

The EA process does not propose or identify specific effluent and emission limits. It is up to the proponent, based on a full identification and evaluation of the potential impacts of the project, the capacity of the environment to handle these impacts, and any mitigations that would reduce them, to determine the overall impact of the project and recommend specific limits that a particular receiving environment can support. If, through the EA review, proposed emission limits are identified to address the potential impacts of a project without causing significant environmental or adverse effects, the project can receive an EA approval. Specific limits (i.e., pertaining to effluent and emissions) are established through subsequent authorizations (i.e., industrial approval) once this planning phase and the environmental review is complete.

Former Project

NPNS's former *Replacement Effluent Treatment Facility Project* was twice registered under the Class I EA process. A thorough environmental review concluded each time that NPNS did not provide enough information to determine if adverse effects or significant environmental effects would result from the project. 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.

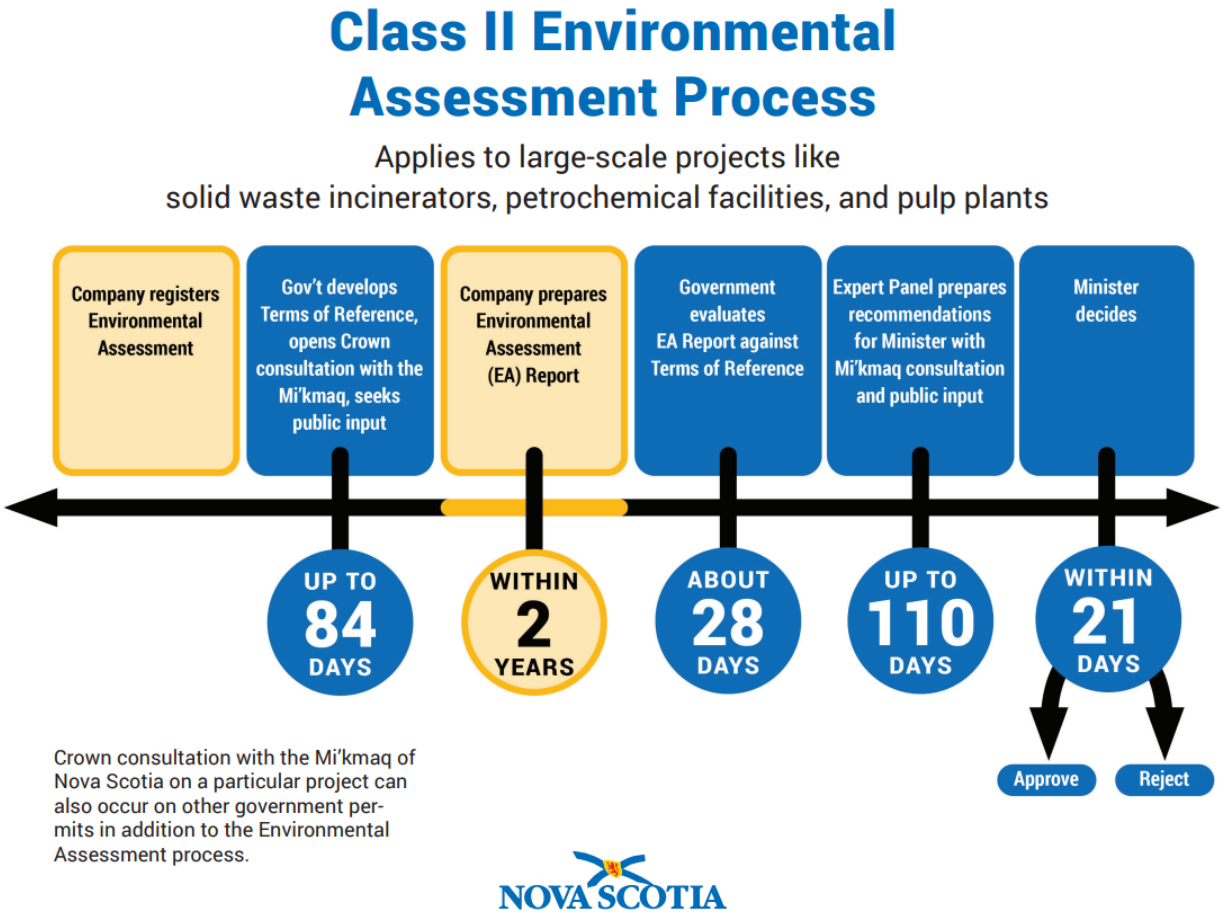
As a next step in the EA process, NPNS was required to submit an Environmental Assessment report on the *Replacement Effluent Treatment Facility Project* by April 2022 that met the expectations of the Terms or Reference provided to NPNS in December 2020. On March 5, 2021, NPNS formally withdrew this project.

New Project

On July 16, 2021, the Minister of Environment and Climate Change (Minister) determined that NPNS's proposed new project, the *Mill Transformation and Effluent Treatment Facility Project*

requires a Class II Environmental Assessment in accordance with the Environmental Assessment Regulations

On December 7, 2021, NPNS formally registered the *Mill Transformation and Effluent Treatment Facility* project for a Class II Environmental assessment. NPNS's registration document is available online at [Mill Transformation and Effluent Treatment Facility Project | Environmental Assessment | Nova Scotia Environment](#).



Purpose of the Terms of Reference

This draft Terms of Reference has been developed based on a review of the proposed project described in NPNS's registration document. The purpose of the Terms of Reference is to guide the company in understanding the information required for inclusion in their Environmental Assessment report that will be evaluated through the Class II EA process.

Comments from the Mi'kmaq, interested stakeholders, and the public on this draft Terms of Reference will inform the development of these requirements.

Comments obtained through the review period are provided to the company which can provide input on the comments prior to the finalization of the Terms of Reference. Once the Terms of Reference is finalized and provided to the company, NPNS will have up to two years to submit their Environmental Assessment report. NPNS is expected to prepare an Environmental Assessment Report that fulfills the intent of the final 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.

Under the Class II process, the Minister refers the report to the Environmental Assessment Panel (Panel), who conducts public review of the Environmental Assessment Report that can include public hearings. The Panel prepares a report and recommendation to the Minister based on review of the Environmental Assessment Report and input gathered through the public review and consultation with the Mi'kmaq. Following receipt of the Panel's recommendation, the Minister can choose to approve or reject the project.

Next Steps

This document presents the Draft Terms of Reference for public review and comment on their adequacy and any 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 https://novascotia.ca/nse/ea/comments.asp, by email at EA@novascotia.ca or by mail to the following address on or before **January 31, 2022**, and addressed to:

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

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INTRODUCTION

1.1 Background

The *Mill Transformation and Effluent Treatment Facility Project* (the project or undertaking) proposed by Northern Pulp Nova Scotia Corporation (NPNS or the Proponent) was registered for environmental assessment (EA) as a Class 2 undertaking pursuant to Part IV of the *Environment Act* on December 7, 2021

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.

The purpose of this document is to identify for Northern Pulp the information requirements for the preparation of an Environmental Assessment Report (EA Report) to be evaluated through the Class II EA process. Northern Pulp is expected to prepare an EA Report which fulfills the intent of the Terms of Reference. The EA 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 Terms of Reference include Valued Ecosystem Components (VECs) which must be adequately addressed in the EA Report. While the Terms of Reference provides a framework for preparing a complete EA Report, it is the responsibility of NPNS to provide sufficient data and analysis on any potential environmental effects of the project presented in a clear format that can easily be reviewed and evaluated by the Minister, government reviewers, the Mi'kmaq of Nova Scotia and the public.

Once the Minister refers the EA Report to the Environmental Assessment Review Panel (Panel), 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 government reviewers, 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. In addition, it will help with understanding of the potential impacts of the project to potential or established Aboriginal or Treaty rights.

The Panel is responsible to review the EA Report, conduct a public review of the EA Report, which can include public hearings, and prepare a report and recommendation to the Minister that includes input gathered through the public review and consultation with the M'kmaq.

The Minister then has the following 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, with or without conditions. If such effects cannot be mitigated, a project may be rejected.

1.3 Proposed Project

This Section is based on the proposed project as described in the November 2021 Environmental Assessment Registration Document (EARD). 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 mill infrastructure and process components that will be changed or updated as well as the design and development of a new effluent (wastewater) treatment facility (ETF) constructed on Northern Pulp property, and a transmission pipeline that will carry treated effluent to the Pictou Harbour estuary and discharge via an engineered diffuser (marine outfall).

The mill transformation components of the project include upgrades to a number of the existing in-mill processes. Modifications or additions to the mill infrastructure or processes include:

- Upgrades to washing and screening components of the pulping process and collection of odour producing gases;
- Installation of a two-stage oxygen delignification process and on-site oxygen generator;
- Upgrades to the bleaching plant;
- Lignin separation;
- Upgrades to green and white liquor clarifiers;
- Calcium liquor cycle upgrades;
- Conversion to a low-odour recovery boiler;
- Replacement and decommissioning of emission stack scrubber equipment;
- Steam stripper system upgrades;
- Upgrades to mill's spill containment and cooking chemical recovery processes; and
- Installation of cooling towers and cooling water loops within the mill.

The project components are identified to have been designed to meet Best Available Technology standards for the pulp. They are intended to: improve overall air and effluent emissions from the mill, reduce visible plumes and odours during normal mill operations, improve the quality of effluent to the treatment facility, and reduce the mill's water usage.

In addition, the mill transformation work will also include the exterior of the existing mill building. Work will be undertaken to rejuvenate external areas of the mill, including cleaning of brick facades, cladding replacement, removal of obsolete equipment and tanks, repainting, and general landscaping.

NPNS also proposes the design and development of a three-stage effluent treatment facility to be located on the mill property. Primary treatment is proposed to consist of a two-stage process

including an automatic raked bar screen to remove large debris from the effluent stream and a concrete circular clarifier to remove wood fiber and lime by gravity. Secondary treatment at 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. The tertiary treatment stage will consist of rotating disc filters (Veolia's Hydrotech Filters) to remove suspended solids and address effluent colour.

Once treated onsite at Northern Pulp's facility, effluent is proposed to be sent through a pipe (discharge point to be determined through completion of a receiving water study and engineering design process) and discharged via an engineered multi-port diffuser into the Pictou Harbour estuary from the mill property.

NPNS also proposes to construct a 35,000 m^3 spill basin between the mill and the ETF in the event of major process upsets. The basin is proposed to be designed to be able to contain 20 hours of mill effluent and will be kept empty during normal mill operations.

1.4 Environmental Assessment Requirements

The project is a Class II Undertaking pursuant to Schedule A of the Environmental Assessment Regulations made under Section 49 of the *Environment Act*.

The Environmental Assessment Regulations require that the proposed Terms of Reference for the EA Report be prepared by the EA Administrator and made available for public review. Public comments on the Draft Terms of Reference will be accepted from December 21, 2021, to January 31, 2022.

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.

NPNS is required to submit the EA Report within two 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 and Climate Change (ECC) 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 is required by the EA Regulations to refer the EA Report to an EA Review Panel (Panel) for review. To assist in their review and preparation of a recommendation, the Panel may also choose to hold public hearings to receive submissions and comments from any interested party. At the conclusion of this process, the Minister has the

following 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 https://www.novascotia.ca/nse/ea/

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

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.

Also to be included are:

- the environmental effects of the undertaking on reserve lands, as well as suspected or known burial and archeological sites;

- a description of the potential impacts of the proposed undertaking to potential or established Aboriginal or Treaty rights, in respect of the Crown's duty to consult, and where appropriate, accommodate Aboriginal peoples.

The EA Report 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.
  ** including departments, offices, and agencies*

In preparing the EA Report, as applicable, NPNS may refer to comments from the above-noted parties during the EA review of the previous Replacement Effluent Treatment Facility project, for both the EARD and the Focus Report previously submitted by NPNS, 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 November 2021 EARD. 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 EA report should apply intuitive methods to depict data, models, analyses, and their relevance to the environment, processes, and/or assessments as applicable.

The order in which information is presented is at the discretion of NPNS; however, a concordance table will be required to indicate where the information can be found. When the Minister refers the EA Report to the EA Review Panel for review, NPNS may provide additional information to the EA Panel prior to the close of a public hearing.

Since the EA Report is intended for public review, the information should include an Executive Summary presented in non-technical language. NPNS 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

NPNS must provide information, as part of its comment on the draft Terms of Reference, about any anticipated changes to the proposed project relating to work required to return the mill to an operational state, including how these changes, if any, may affect the Terms of Reference.

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

- 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 NPNS'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; managing potential adverse environmental effects, and mitigating potential adverse impacts to Aboriginal and Treaty rights.

Provide details on relevant corporate experience (NPNS and related companies) and experience in building and operating other similar facilities. Provide a record of the environmental performance and capability of NPNS 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. Clearly describe the location and distance from the proposed site(s) to all potential receptors (e.g., permanent, seasonal or temporary), taking into consideration the different land uses (e.g., residential, recreational, industrial, etc.), and all sensitive populations (e.g., schools, hospitals, retirement complexes, assisted care homes, etc.) Consider the types of residents and visitors, based on land uses, and include members of the public and/or members of specific population sub-groups (e.g., Indigenous peoples, campers, hunters, etc.). 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, 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 company, the Crown, or private lands. Provide details of existing agreements to develop the project on lands not owned by NPNS. 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: all planned changes to mill infrastructure and in-mill improvements, the ETF, land and marine based sections of effluent pipeline and the diffuser. All associated infrastructure and components must be detailed. In cases where existing equipment are proposed to be re-purposed, converted or modified to support the proposed project, provide detailed assessments and engineering re-design plans to address the suitability for the proposed purpose, condition of equipment and life expectancy, including the effect of gases and chemicals proposed to be collected on mill equipment and infrastructure. 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:

Planned Changes to Existing Mill Infrastructure and Processes

- Preliminary design, performance expectations, and/or other documentation to demonstrate how the proposed mill transformation/project components will achieve the stated performance objectives;
- Identification and characterization of the proposed water supply, including how the water will be conveyed to the site;
- Schedule of in-mill component construction/installation and other changes relative to the ETF construction schedule; and
- A waste dangerous goods management plan to accommodate for worst case scenario within design of the proposed ETF, including releases of black liquor, major equipment malfunctions, etc. 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 ECC. Additional details relating to disposal of waste goods and construction materials may be required.

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);
- Details (including characteristics and toxicities) and quantities of all sludges, ashes, or other wastes generated from the biological activated sludge (BAS) treatment process and/or from the boilers;
- Justification of spill basin size. Consider worst-case scenarios and requirements under the Dangerous Goods Management Regulations. Provide information on any proposed

process or chemical changes that may impact the quality and quantity of materials that may be released and how leakage will be tracked and contained to ensure that incompatible materials do not come into contact and may be contained for collection and disposal without adverse reaction or dilution;

- 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. Demonstrate that its capacity will be sufficient for all intended use cases, including justification and clearly outlining assumptions used to support proposed basin sizing;
- Provide a complete physical and chemical characterization of NPNS's anticipated raw wastewater (influent to ETF), to support the assessment of the appropriateness of the proposed treatment technology. The complete characterization must 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.). Characterization of influent may require a combination of literature, analysis of data from comparable mill(s), and/or modelling associated with proposed in-mill processes. All analysis and discussion must identify laboratory reportable detection limits;
- Influent and effluent characterization must identify contaminants of potential concern using a detailed quantitative approach to estimate discharge concentrations and loads from the treatment sources (e.g., literature review, background water quality, and similar facility effluent data). Must include, at a minimum, AOX, total nitrogen, total phosphorus, colour, chemical oxygen demand (COD), biological oxygen demand (BOD_5), total suspended solids (TSS), dissolved oxygen (DO), pH, temperature, total dissolved solids (TDS), mercury, dioxins and furans (all applicable congeners), PAHs, PCCD/F, resin compounds, chlorophenolic compounds, non-chlorinated phenolic compounds, and chlorinated VOCs;
- Using the anticipated raw wastewater characterization, evaluate all contaminants of potential concern (COPCs) with respect to the effluent discharge quality following treatment using the proposed technology. 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, but not limited to, the draft Pulp and Paper Effluent Regulations (PPER) daily and monthly average limits. The ETF treatment process shall also be designed to account for contaminants of concern and their effect on the environment as determined by a receiving water study;

- Evaluate anticipated effluent flow rate (maximum), through modelling or assessment of other data sources, to support treatment capacity of flow of effluent per day;
- Evaluation of sludge and ash management options, inclusive of agronomic beneficial reuse and disposal, including the rationale for the preferred option. If the preferred option uses the biomass boiler, provide a secondary disposal option; and
- Provide details of the ETF commissioning process and impact of commissioning phase on performance of proposed treatment technology.

Land-Based Sections of Pipeline Route

- Plans for intrusive geotechnical surveys to support proposed pipeline construction methods
- The geotechnical survey plan must include collection of standard hydrogeological information on borehole, monitoring well and test pit records including:
    - estimated water levels
    - soil types, description, and depths
    - bedrock geology description of rock type, rock quality fracturing, and depths
    - monitoring well construction details (when applicable);
- Functional design drawings of anticipated land-based pipeline alignment
- Risk assessment of the land-based pipeline design, including:
    - Evaluation of the probability of a leak, spill or release, based on a literature review of comparable designs and installations, and considering future construction/maintenance activities that may be required or undertaken others (e.g., installation of underground and/or overhead utilities or municipal services);
    - Identification of points along the pipeline route that are most susceptible to failure;
    - Details of a secondary containment system (e.g., double-walled pipeline) and/or other protective engineered measures and proposed locations, based on the risk assessment; and
    - Leak detection technologies for the entire land-based pipeline, considering the private supply wells. Provide details on the sensitivity of detection technologies, staff training plans, maintenance and inspection frequencies, methodologies and response protocols.
- 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

- Plans for intrusive geotechnical survey results to support proposed marine pipeline construction methods;
- Detailed assessment of interaction between the effluent discharge plume and the seabed and benthic environment;
- Leak detection technologies for the entire marine-based pipeline. Provide details on the sensitivity of detection technologies, staff training plans, maintenance and inspection frequencies, methodologies and response protocols, including during periods of ice coverage; 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 refuges, 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;
- Identification of equipment staging areas and lighting requirements during night-time construction activities;
- 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;
- 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 leachate collection and 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.

If the project as proposed is not a designated project, or has not been designated by the Minister of Environment and Climate Change Canada under the *Impact Assessment Act* (IAA), a clear description of any components of the project occurring on Federal Lands is required, before

Federal Authorities can determine their Section 82 IAA obligations. Describe all 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 NPNS. 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.

Should alternatives to the project include alternate water sources not identified in the EARD, then all influent and effluent characterization must also be conducted for this alternative scenario, accurately and adequately reflecting the alternative source water and its physical, chemical, and biological conditions. This alternative source water scenario and its potential for different water characterization should be carried through to all applicable modeling, baseline, compliance, and environmental effects monitoring activities and programs.

7.0 OTHER METHODS FOR CARRYING OUT THE PROJECT

Discuss other methods for meeting the need for the project, including but not limited to, in mill processes and technologies, pipelines and treatment technologies. This section shall also discuss alternate locations for the project, including rational for siting of project components exterior to the mill required to support the project (e.g., access roads, spill basin, pipeline, etc.).

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. NPNS'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 comments received during the previous *Replacement Effluent Treatment Facility* 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 suitability, calculations of margins of error, and uncertainty.

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.

NPNS is encouraged to consult with relevant government departments when determining the need for updated baseline (field and desktop) information, the 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.

Provide an ice scour and grounding baseline study. The ice scour and grounding survey should capture conditions immediately following spring break up. Results will need to be accounted for in the final pipeline and outfall design and associated impact assessment elements. The study shall also include and assess all existing data (from all relevant sources) on sea ice in the study area.

9.2 Aquatic Environment

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 uses 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 project.

9.2.2 Surface Water

Provide a general hydrologic, hydraulic and water quality description of all surface water resources in the study area, including upstream and downstream to all project components. Existing uses, approved water withdrawals, and users of the watercourses shall be identified, including use by the Mi'kmaq of Nova Scotia. Provide a map of all watercourses located on the subject property. Provide detailed sampling results from all baseline groundwater and surface water quality monitoring networks, inclusive of the Mill Monitoring Network and the Industrial Landfill Monitoring Network. Account for the full list of potential contaminants of concern in the freshwater and marine systems within the project footprint.

9.2.3 Marine Water

Provide baseline studies that characterize environmental conditions representative of the full study area (e.g., multiple locations) for all four seasons and accounting for yearly variations, including but not limited to: climate, water quantity (e.g., current profiles, water column stratification, wave height, tide levels), and water quality (e.g., temperature, salinity, chemical and physical water quality).

These studies shall include characterization of both normal and extreme and/or atypical environmental conditions (e.g., extreme high or low tides, water levels, localized and overall currents, flow, water and air temperature, wave heights, wind, storms, ice).

Develop calibrated and validated existing conditions scenarios for the computer models to be used for the receiving water study and the marine water effects assessment (see Section 10). Baseline climate and marine water quantity and quality data should be used for model setup, calibration and validation. Evaluate the adequacy of seasonal variation and the lengths of the datasets used in model setup and/or calibration/validation. A summary of model confidence in adequately representing the existing marine water environment in all seasons is to be included. Model selection, scenarios and setup must be discussed with Environment and Climate Change Canada.

9.2.4 Wetlands

Identify the location, size and class(es) of any wetland (including eel grass beds) and/or wetland complexes within the predicted zone of influence including wetland delineations (US Army Corps of Engineering Wetland methodology) and conduct a wetland evaluation. Evaluation of the wetlands shall include wetland functional assessment (WESP-AC model), wildlife habitat potential (including rare and endangered species), wetland/species specific uses, groundwater recharge potential and importance of groundwater in maintaining wetland function, role of the wetland in surface water regulation (e.g., 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 significant hydrologic functions or benefits;
- Provide high support functions to wildlife; and
- Have high social or cultural importance.

The wetland evaluation shall include assessment of adjacent wetland areas and the 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. Any wetlands potentially impacted by project activities must also be evaluated for potential impacts to fish and fish habitat.

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

Assess each wetland for potential to support fish and fish habitat directly and indirectly and the potential to impact downstream fish and fish habitat. Assessment must include multi

season fish collection methods, such as electrofishing, as well as water quality data relevant to fish (pH, salinity profiles, total suspended solids, and dissolved oxygen).

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. Specific climate conditions to consider include projected changes in temperature, precipitation, storm events, sea level rise, and oceanography. 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.

Specifically, identify the activities associated directly with the construction and operation of the proposed project which will be sources of greenhouse gases and provide the greenhouse gas monitoring approach for the stages of the project.

Use accepted quantification techniques to estimate the quantity of greenhouse gases to be emitted during the construction of the project and what the expected annual greenhouse gas emissions would be during operation. Consult the Nova Scotia Quantification Reporting and Verification Standard for support on emission factors and methods of quantification.

Determine the overall impact of the greenhouse gas emissions from the project on the annual emissions profile of the province.

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. Include scenarios for ambient air quality data for current conditions (e.g., without mill in operation) and one reflecting historical data from when the mill was in operation.

Provide a description of existing ambient air quality conditions for the study area, for any potential contaminants of concern which must include nitrogen dioxide (NO_2), sulphur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), particulate matter (total suspended particulate (TSP),

fine particulate matter (diameter less than 2.5 microns ($PM_{2.5}$)) and coarse particulate matter (diameter less than 10 microns (PM_{10})), total reduced sulphur (TRS), speciated VOCs, semivolatile VOCs, metals, polycyclic aromatic hydrocarbons (PAHs), dioxins and furans, aldehydes and ammonia concentrations. The report must include ambient and peak concentrations for contaminants of concern. Provide a description of existing odour conditions based on the measurement of odourous species and existing activities in the study area.

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 (e.g., hospitals, schools, day care facilities, long-term care facilities) and/or locations (e.g., locations of sensitive species, locations where country foods are collected).

9.3.3 Ambient Noise and Light 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.

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 Wildlife, Wildlife Habitat and Species-at-Risk

Identify flora, fauna, and habitat types that will be intersected by all components of the project. Appropriate desktop surveys and field surveys discussed with Nova Scotia Natural Resources and Renewables (NRR) Energy– Wildlife Division and Environment Canada and Climate Change (ECCC), 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 species of fauna (including lichens, and 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 NSNRR – Wildlife Division; the Atlantic Canada Conservation Data Center (ACCDC); ECCC; Nova Scotia Communities, Culture,

Heritage and Tourism (CCHT); the latest Committee on the Status of Endangered Wildlife in Canada (COSEWIC) list; the Atlas of Breeding Birds of the Maritime Provinces; citizen science sources such as iNaturalist and eBird; 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 NSNRR – Wildlife Division and Canadian Wildlife Service;

- Measures taken to minimize the impacts of the project construction and operation on flora species. Include any landscaping plans for preservation of existing vegetation and remediation of areas (including the temporary facilities, laydown areas, and access roads);
- A clear description of all survey methodology (including, where appropriate, the type of survey, dates, timing windows, weather conditions, and qualifications of personnel involved in survey work) and results;
- Identification of any existing or planned wildlife management areas, ecological reserves or wilderness areas as well as managed wetlands, significant wildlife habitat, and federal critical habitat and provincial core habitat for species at risk; 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, occur or breed in or near the study area.

9.4.2 Freshwater Aquatic and Marine Environment

Any baseline studies should be undertaken during appropriate spatial and temporal scales and identify and delineate sensitive or important habitats that may be impacted from the installation of the pipeline.

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

- Description of sediment quality throughout the potential receiving water environment, including any reference data against which it may be compared. Justify the locations used for sediment data collection.
- 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, seafood processing and seafood buying operations, 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. Long term effects of the project on marine fisheries, including socio-economic impacts must be considered.

9.7 Existing and Planned Land Uses

Describe the patterns of current and planned land use and settlement in the study area including residential, commercial, 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, Tourism and Heritage (CCTH). 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

The EA process does not propose or identify specific effluent and emission limits. It is up to the proponent, based on a full identification and evaluation of the potential impacts of the project, the capacity of the environment to handle these impacts, and any mitigations that would reduce them, to determine the overall impact of the project and recommend specific limits that a particular receiving environment can support. If, through the EA review, proposed emission limits are identified to address the potential impacts of a project without causing significant environmental or adverse effects, the project can receive an EA approval. Specific limits (i.e., pertaining to effluent and emissions) are established through subsequent authorizations (i.e., industrial approval) once this planning phase and the environmental review is complete.

Describe the effects of the project on the environment during all phases of the project (e.g., site preparation, construction, commissioning, operation, maintenance, and decommissioning), including any environmental change on health, socio-economic conditions, archaeology, reserve lands and the current use of land for traditional purposes by the Mi'kmaq of Nova Scotia. 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.

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) and/or potential adverse impacts on Aboriginal and Treaty rights;
- 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, including incidents involving wildlife (e.g., migratory birds, species at risk, etc.);
- 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.

Section 9.0 includes details regarding the requirements for use of models in representing existing environmental conditions. Those requirements in conjunction with consultation with relevant government departments also apply to models used to support effects assessment activities (Section 10.0). In addition, modelling of various scenarios should be conducted, representing multiple operating and/or discharge conditions, including worst case scenarios. Furthermore, NPNS shall refer to any additional comments received from relevant government departments during preparation of the EA, and on this Terms of Reference prepared by ECC.

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 effects of the project on the geophysical environment and the significance of these effects. This must include but not be limited to:

- Potential effects of geophysical impact related activities (e.g., blasting, bedrock removal, excavation and disposal) along the full pipeline route,referencing sediment sampling and the results of geotechnical investigations; and
- Ice scour and grounding effects considering proposed pipeline burial depths.
- Consideration of any disposal or re-use of soils and/or sediments activities required for construction of the effluent pipeline.

10.2 Aquatic Environment

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

- Changes in groundwater and surface water quality and quantity as a result of effluent discharges from the project site, considering ecosystem integrity and changes in hydrology to areas immediately adjacent to the project area;
- 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;
- Confirmation of the water source to be relied on for desired withdrawal volumes, including a summary of any agreements that are in place for this water and a description of how it will be conveyed from the source to the site;
- Where wetland avoidance is not possible or where project activities occur immediately adjacent to wetlands, identify, and discuss how project activities will directly or indirectly impact wetland size, composition and functions.
- Appropriate guidelines including but not limited to the Canadian Council for Ministers of the Environment (CCME) Water Quality Guidelines for the protection of Aquatic Life and background water quality results shall be used in evaluating the significance of the predicted impacts on water quality and ensure the protection of relevant water uses (aquatic life, recreational use, agricultural use, and drinking water supply). Consideration should be inclusive of temperature effects.
- 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

In conducting the effects assessment on groundwater, the EA Report must identify and evaluate potential risk to groundwater resources associated with the project.

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 and quantity on fish and fish habitat;
- Potential effects to community water supplies (protected and unprotected), and industrial/commercial, recreational and agricultural users; and
- Potential impacts to surface waters related to accidents or malfunctions (e.g., pipeline leaks/breaks).

10.2.3 Marine

Conduct a Receiving Water Study (RWS) designed to achieve the following objectives:

1) provide input to the engineering design of the effluent treatment facility, effluent treatment process requirements, and siting of the effluent treatment outlet (pipeline and diffuser), and
2) provide information on effluent dispersion, which will be applied in the human health and ecological risk assessment and environmental assessment of the project.

The study must clearly identify the scenarios included for consideration and justify the exclusion of reasonable alternative scenarios (e.g., the number of ports on the effluent diffuser, and the geographic extent of the modeling). The study must consider the tidal nature of the Pictou Harbour, its tributaries (the West River, Middle River and East River of Pictou), the presence of the Harvey A. Veniot Pictou Causeway, as well as potential for interaction with waste effluents from other industrial and municipal sources.

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

- Potential short-term and long-term effects on the receiving water environment based on a receiving water study that assesses fate and transport of all COPCs for a range of scenarios reflective of conditions possible in the study area. It must also account for conditions associated with seasonal changes and extreme weather events. This study shall be based on the results of the effluent characterization and other relevant studies, such as the Human Health and Ecological Risk Assessment (HHERA). Input datasets (e.g., water level and wave height data) to support model setup and results of the assessment are to be provided as digital submissions, including, but not limited to, discharge plume dimensions and dilution ratios;

- The adequacy of the receiving water study model in representing the receiving water environment for the calibration and validation periods using Goodness of Fit and other appropriate industry-standard statistical procedures including the adequacy of the seasonal variation and lengths of datasets used in model setup and calibration/validation for all scenarios simulated. Demonstrate the relevance and suitability of the outputs (parameters / data) from any one given model as inputs to any other given model (e.g., CORMIX (near-field) and Delft3D (Hydrodynamic / far-field). A summary of model confidence in adequate representation of plume dispersion and multi-year effluent discharge transportation of COPCs and accretion/build-up within the receiving water environment is to be included;
- How the initial mixing and dispersal of the near-field plume are accounted for in model simulations of the far-field extent and effluent concentration;
- The receiving water study shall be used in design of the proposed ETF treatment process, facility, pipeline and diffuser to mitigate negative environmental effects that may be caused by COPCs in the effluent. The design of the ETF (and associated components) in combination with the receiving water study will be evaluated to ensure that they are inclusive of:
    - the effluent entering the ETF treatment process has been characterized, including all COPCs
    - environmental quality guidelines for the COPCs are determined based on the effluent characterization.
    - the near field dilution zone is modelled to determine application factors of dilution
    - Using the model results, discuss relevant effluent targets calculated for the effluent discharge based on achieving appropriate environmental quality for the receiving water body.
- Nitrates and ferric oxides associated with pulp and paper effluent can cause negative impacts on the receiving marine sediment environment. Therefore, identify and justify mitigation measures to eliminate or reduce these impacts at the point of discharge and within the dilution zone.
- Whether colour is expected to be visible at the water surface above the diffuser site, based on the results of the receiving water study. Evaluate, including influence of in-water reactions (e.g., potential stratification of the water column) and any associated impacts on marine sediments and marine life;
- Potential effects of the build-up of COPCs (e.g., marine and shoreline accumulation), including the estimated dilution potential at various distances from the diffusers based on calibrated model results, as appropriate;

- Potential impacts of sediment transport within near-field and far-field areas using sediment transport modelling, accounting for various transportation scenarios that may be possible. The modelling shall consider 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 including potential bioaccumulation/biomagnification;
- Potential risk of impacts to the marine environment, including shore-based seafood processors and commercial fisheries operations, resulting from leaks from marine based sections of pipeline; and
- Develop an environmental effects monitoring program.

10.2.4 Wetlands

In conducting the effects assessment on wetlands, the EA Report must identify and evaluate the potential impacts to wetlands/wetland complexes associated with the project. The assessment shall include, but is not limited to, a description of the impacts to wetland size and/or function based on likely activities required to support project activities. The assessment shall describe predicted impacts to wetland characteristics and functions provided by the wetland/wetland complex and should be based on the results of existing and/or any required supplemental field surveys and description of general construction activities required. The effects assessment must specifically address:

- Potential direct and indirect impacts to wetlands and explanation of how project development will adhere to the Nova Scotia Wetland Conservation Policy;
- Where wetland avoidance is not possible, discuss wetland-specific construction activities including trenching, trench dewatering, surfacewater diversions and/or maintenance of hydrologic connection of wetland complexes; and
- Impacts to priority wildlife and wildlife habitat as a result of wetland-specific construction activities.

10.3 Atmospheric Resources

10.3.1 Climate

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.

10.3.2 Air Quality

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

Describe the sources, types and estimated quantities of air emissions from the project for all potential air contaminants of concern for all project phases (construction, operation and decommissioning) 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, nitrogen oxides (expressed as nitrogen dioxide (NO_2)), SO_2, TSP, $PM_{2.5}$, PM_{10}, TRS, speciated VOCs, semivolatile VOCs, PAHs, dioxins and furans, ammonia, aldehydes, odour, and metals.

Provide a full statistical analysis for the ambient air quality monitoring data obtained at the Pictou monitoring station for the mill pre- and post-hibernation periods. Describe how the proposed project emissions compare to the pre-hibernation emissions and the associated predicted changes in air quality.

The effects on air quality of future projects and activities in proximity to the project that may interact in a cumulative fashion with the project emissions should be assessed. Cumulative effects of past and present projects or activities are to be captured with the inclusion of baseline concentration data in air quality predictions.

In addition, the EA Report must also include, but not be limited to the following items:

- Consideration of the effects of fumigation and coastal interaction through the use of a dispersion model that appropriately simulates these effects;
- Modelling of both the project construction and operation phases based on the scenario for each in which the highest concentration of an air contaminant occurs at ground level. The conditions that correspond to the maximum air contaminant concentration at ground level may occur when the facility is at the maximum construction/production level or running at a lower construction/production level or when the process is in transition. The report shall include a description of the construction and operating conditions that result in the maximum ground level concentrations of an air contaminant for each phase;
- The contaminants of interest to be included in the dispersion modelling assessment should align with (but not limited to) those defined in Section 10.3 as requiring

emission estimates. If a species is deemed insignificant and screened from modelling, justification and description of the screening process must be provided;

- Identification of individual emission rates as measured or estimated and include the reference and justification for the values used;
- Comparison of the maximum predicted ground level concentrations, including baseline concentrations, of all contaminants of concern with relevant ambient air quality standards. NPNS shall use recognized standard, including those used by Federal or other Provincial jurisdictions. The *Environmental Goals and Climate Change Reduction Act* requires that the ambient air quality standards be updated by 2025. Should new standards be adopted, you may be required to meet the new standards;
- Contaminant deposition rates in aquatic and land environments over the zone of influence of the project;
- Risk assessment and mitigation plan for contaminants that demonstrate a predicted exceedance of a relevant ambient air quality standard;
- Inclusion of isopleth mapping and frequency analysis for all contaminants predicted to exceed relevant ambient air quality standards; and
- Identification of sensitive receptors on all isopleth mapping. Sensitive receptors include (but are not limited to) hospitals, schools, day-care facilities and long-term care facilities.

10.3.3 Ambient Noise and Light

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

The EA Report must discuss the potential impacts of predicted increases in noise levels during all phases of the project. For noise, receptors include an adjacent dwelling including, but not limited to, a building or structure that contains one or more dwellings, educational facility, daycare/nursery, place of worship, hospital, seniors' residence and could also include a vacant lot where appropriate zoning or permits to build such dwellings have been approved, and aquatic, marine and terrestrial habitats. Should new guidance be adopted before an industrial approval is issued, you may be required to meet the new guidance.

Where screening indicates that there is cause for concern, noise emissions should be modelled using a recognized computer model, to ascertain impacts. NPNS must:

- identify all receptors within 2 km, including sensitive receptors (i.e., schools, campgrounds, care homes, etc.);

- use existing (background) noise levels and the expected levels of all potential noise sources associated with the construction and operation of the project, including traffic movements, to determine cumulative impacts;
- consider cumulative impacts with the addition of proposed activities; and
- discuss the predicted effects (with rationale), if any, the increased noise levels will have on wildlife and receptors near the project.

All results and assumptions should be included in the EA report.

The EA Report must discuss the potential impacts of predicted increases in light levels during all phases of the project.

10.4 Wildlife, Wildlife Habitat and Species at Risk

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, federal critical habitat and provincial core habitat 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 and effects to migratory birds (e.g., waterfowl and water birds) attracted to project components (e.g., spill basin, open ETF components, etc.).

In conjunction with the Receiving Water Study and siting of the marine project components, provide additional information on impacts to of effluent discharge on the Double-crested cormorant (*Phalacrocoras auratus*) colony located along the east side of Highway 106 Causeway.

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. Consider potential effects to marine species from blasting, dredging and other marine construction, as well as vessel traffic and project operation.

To support the assessment of potential impact of biomagnification on migratory birds such as shorebirds, include marine benthic invertebrates (e.g., polychaete worms, mussel spat, small clams) in the bioaccumulation/biomagnification assessment of the discharge plume.

Include an assessment of COPCs in the baseline fish and shellfish populations and potential effects due to expected discharge quality. Undertake a model-based evaluation of the chronic

effects of thermal cooling water discharge on fish and fish habitat in the receiving water. Include a summary of the potential effects on freshwater and marine species known to be important to the Mi'kmaq of Nova Scotia.

10.5 Agriculture, Fisheries and 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, seafood buying and processing facilities, 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'kmaq of Nova Scotia.

Assess the potential effects 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 receiving water study. Include appropriate invertebrates and lower trophic level test organisms and assess the potential for bioaccumulation for all test animals. The selection of information sources, representative marine species and assessment methodology must first be agreed upon by relevant government departments.

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 and Ecological Risk Assessment (HHERA) 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 terrestrial country foods (plants, berries, game animals, 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 HHERA must consider baseline data and represent all 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 HHERA 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 HHERA 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 all relevant COPCs and exposure pathways for both terrestrial and aquatic related inputs in the HHERA problem formulation.

Screen COPCs in project effluent discharge according to guidance from Health Canada. Incorporate findings from the 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 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 areas 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 NPNS must consult with Nova Scotia Department of Communities, Culture, Heritage and Tourism (CCHT) 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 potential adverse impacts to Aboriginal and Treaty rights; and 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 Aquatic Environment

11.2.1 Groundwater Quality and Quantity

Describe measures to avoid, minimize or otherwise mitigate effects 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 (see Section 14.0).

Describe measures to be employed in the event of accidental contamination or dewatering of any water supply wells (municipal and private) 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 measures to avoid, minimize or otherwise mitigate effects on surface water resources, including but not limited to erosion and run-off 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

Describe measures to avoid, minimize or otherwise mitigate effects 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/compensation plans for any impact to marine water resources, including decrease of water quality or quantity and impacts to commercial fisheries, shore-based buyer and processing operations which may rely of marine or freshwater.

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

11.3.1 Climate

Provide a plan for the mitigation of unnecessary greenhouse gas emissions during construction and potential methods for the reduction of greenhouse gas emissions during operation.

11.3.2 Air Quality

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

Specifically, describe measures that will be taken to control emissions including, but not limited to, CO, nitrogen oxides expressed as NO_2 SO_2, TSP, $PM_{2.5}$, PM_{10}, TRS, speciated VOCs, semivolatile VOCs, PAHs, dioxins and furans, ammonia, aldehydes, odour, metals, and diesel particulate matter (DPM), if applicable. The best available control technology economically achievable should be implemented on major emission sources and justification of the selected method(s) should be provided.

After mitigation measures have been selected, the following steps should be taken:

- The model shall be rerun, incorporating the mitigation options to address any predicted exceedances of relevant ambient air quality standards to demonstrate no predicted exceedances. Justification must be provided for the selection of the proposed mitigation method(s); and

- An implementation schedule for potential mitigation options must be provided.

All modelled scenarios must demonstrate compliance with the new ambient air quality standards and associated policy.

11.3.3 Ambient Noise and Light

The EA report must contain a description of all measures that will be taken to mitigate any potential increase in noise levels during construction and operation. Where elevated noise levels are identified, the model must be re-run, with mitigation, to demonstrate compliance. This must include:

- a description of the extent to which these noise emissions can be reduced and contained to minimize effects upon the wider locality and receptors, including potential future development; and
- a discussion of the methods to be used to mitigate noise levels throughout the life of the development should noise modelling be inaccurate or noise levels be greater than 40 dBA.

The EA report should illustrate the mitigation options that were considered and a justification for the selected choice(s) must be provided. The report must also include a discussion of the methods to be used to monitor noise levels throughout the life of the development.

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

11.4 Wildlife, Wildlife Habitat and Species at Risk

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.

Describe measures to address invasive species management and prevention of the spread of invasives both on and off site.

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

The EA Report must also include, but not be limited to the following additional items:

- Mitigation plan developed in consultation with NSLAF and ECCC 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:
    - Mitigations to address encounters for the following species which were observed during field programs: Barn swallow (Hirundo rustica, SARA Threatened, NSESA Endangered), Eastern wood-pewee (Contopus virens, SARA Special Concern, NSESA Vulnerable), and Common nighthawk (Chordeiles minor, SARA Threatened, NSESA Threatened);
    - Mitigations to address potential impacts to coastal waterfowl and their habitat as it relates to effluent discharge, with a focus on Barrow's goldeneye (Bucephala islandica, SARA Special Concern, NSESA Not listed);
    - Measures to prevent the accidental creation of habitat which could become ecological sinks, such as for turtle species or Common nighthawk;
    - Measures to deter migratory birds from coming into contact with harmful substances;
    - Mitigations to address accidental spill or effluent discharge on wildlife and wildlife habitat, including a plan for remediation in the event of such an occurrence;
    - General wildlife mitigations relating to dust, noise, and light pollution.
    - Measures should birds be found stranded on-site (e.g., Leach's Storm Petrel) due to light attraction and/or strong winds blowing birds inland from the coast or ocean.
    - Training of personnel on wildlife identification and appropriate measures to take in the event of wildlife encounters;
    - Communication and reporting plan for wildlife issues, with attention to species at risk.

11.4.2 Freshwater Aquatic and Marine Environment

Discuss measures to avoid, minimize or otherwise mitigate effects 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.

Where impacts to fish habitat cannot be avoided or mitigated, discuss compensation measures to ensure impacts are offset. In the case of fish habitat, offsetting measures are related to a physical activity as outlined in the Fish and Fish Habitat Protection Policy Statement, August 2019. If offsetting is planned to be applied to the project as a mitigation measure, NPNS must provide a preliminary offsetting plan, developed in consultation with relevant government departments.

Based on the results of the evaluation of effluent temperature effects on fish, include

appropriate mitigation measures. 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. When assessing significance of human health effects, significance criteria should be

applied to specific human health effect being predicted in addition to the environmental conditions causing the effect. 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.

Describe plans and procedures to ensure adequate pipeline cover depth and/or protection measures for ice scour and grounding effects.

Describe plans, if applicable, for monitoring contaminated soils and/or sediments that may be disturbed or require management for all phases of the project.

Develop a sediment sampling program to confirm predicted effects of the discharge plume in support of the Environmental Effects Monitoring program.

14.2 Water Resources

Submit a groundwater quality and level monitoring plan for all phases of the project, including the mill location and the location of monitoring wells, monitoring sampling frequency and monitoring parameters.

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

Discuss any surface water monitoring plans for all 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.

Submit detailed information regarding the installation of the marine section of the pipeline, as follows:

- Detailed benthic habitat information in the pipeline route
- Mitigation measures associated with each potential installation method
- Information at the pre-construction (baseline), and post-construction monitoring phases of the project, as well as during construction (e.g., information on turbidity monitoring, and how it will be conducted (divers, ROV, sampling program, etc.)

Submit a wetland specific post-construction monitoring plan. The plan must consider collection of pre-construction baseline condition and identify post- construction wetland performance indicators to address impacts. The plan must detail proposed methodologies that will be used to complete the monitoring program and must detail the proposed frequency of data collection, location of proposed monitoring points and indicate how wetland integrity will be monitored for wetland areas extending beyond the project footprint and present adaptive management options to address post- construction management, including repairs and/or maintenance, vegetation management, drainage and land contour management. The plan should also propose compensation measures required to address loss of wetland habitat and function.

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.

The program must include a complete selection of species, contaminants of concern, and study and reference sampling locations; these elements should remain consistent over time. It should include testing for mercury, methyl mercury, dioxins and furans. Monitoring locations for marine biota should be established in near-field, mid-field, and far-field locations. It shall discuss and provide supporting documentation, if applicable, the adequacy of sampling density for the pipeline length and proposed discharge area. All environmental effects monitoring reports should provide full georeferenced and contaminant data, and they should, ideally, use consistent if not identical analytical techniques.

14.4 Atmospheric Resources

Complete an ambient air quality monitoring plan 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.

14.4 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 posted of the ECC website (https://www.novascotia.ca/nse/ea/) on December 21, 2021 and the Pictou Advocate and Royal Gazette on December 22, 2021. Additional publications inviting

opportunities to comment of the Draft Terms of Reference will published in the New Glasgow News as well as on-line via the Pictou Advocate and New Glasgow News and Facebook. Information pertaining to this EA will be available on this site.

The Class II 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 (when available). Consultation is most valuable if initiated as early as possible before final decisions are made. Consultation is most effective when there is transparency throughout the process based on open lines of communication and the provision of timely, accurate, clear and objective information by NPNS. Sharing information with the Mi'kmaq of Nova Scotia and the general public throughout the process, before and after the EA Report is submitted, is very important to ensure adequate time for interested parties to review the information and for these parties to share feedback with NPNS and identify their concerns.

15.1 Public Consultation

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

Describe all steps taken by NPNS 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 NPNS 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

The proponent is expected to demonstrate efforts to engage and report on results related to such engagement with potential affected Mi'kmaq of Nova Scotia starting as early as possible in the project planning in order to assist the Crown in fulfilling the Crown's constitutional obligation to consult with potentially impacted Mi'kmaq of Nova Scotia groups on potential impacts to potential or established Aboriginal or Treaty rights. The Proponent is encouraged to refer to and follow the Nova Scotia Office of L'nu Affairs' *Proponent's Guide: The Role of Proponents in Crown Consultation with the Mi'kmaq of Nova Scotia* (2011). For the group expected to be most affected by the project, Pictou Landing First Nation (PLFN), the proponent is expected to strive towards developing a productive and constructive relationship based on on-going dialogue in order to support information gathering and the effects and impact assessment.

For Mi'kmaq of Nova Scotia groups that may also be affected by the project, but to a lesser degree, the proponent will, at a minimum, ensure these groups are notified about key steps in the EA Report development process and of opportunities to provide comments on key EA documents and/or information to be provided regarding their community. These groups include:

- Groups represented by the Kwilmu'kw Maw-klusuagn Negotiations Office:
  - Acadia First Nation
  - Annapolis Valley First Nation
  - Bear River First Nation
  - Eskasoni First Nation
  - Glooscap First Nation
  - Membertou First Nation
  - Paq'tnkek First Nation
  - Potlotek First Nation
  - Wadmatcook First Nation
  - We'kowma'q First Nation
- Millbrook First Nation
- Sipekne'katik First Nation

The Crown reserves the right to alter the list of groups that the proponent will engage as additional information is gathered during the EA.

The proponent must seek to directly engage and describe and report on the results of such engagement, with potentially affected Mi'kmaq of Nova Scotia groups to establish an engagement approach. The proponent will make reasonable efforts to integrate Mi'kmaq of Nova Scotia knowledge into the assessment of environmental effects.

In parallel to NPNS 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).

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.