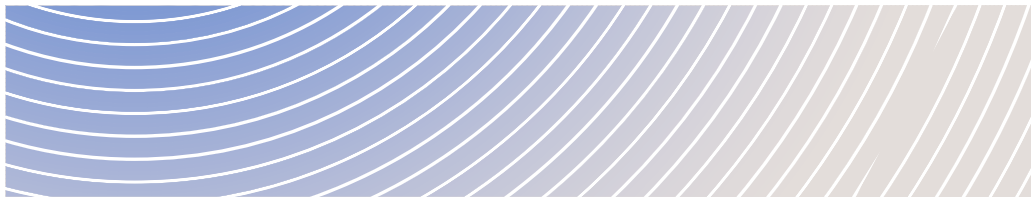


Gazoduq Project



TAILORED IMPACT STATEMENT GUIDELINES PURSUANT TO
THE *IMPACT ASSESSMENT ACT* AND THE *CANADIAN ENERGY
REGULATOR ACT*

July 17, 2020



Impact Assessment
Agency of Canada

Agence d'évaluation
d'impact du Canada

Canada



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List of Abbreviations and Acronyms

Abbreviation/Acronym	Definition
AAQC	Ontario Ambient Air Quality Criteria
ADR	Alternative Dispute Resolution
Agency	Impact Assessment Agency of Canada
BCR	bird conservation regions
CAAQS	Canadian Ambient Air Quality Standards
CCME	Canadian Council of Ministers of the Environment
CER Act	<i>Canadian Energy Regulator Act</i>
CER	Canada Energy Regulator
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
COPC	contaminant of potential concern
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CSA	Canadian Standards Association
CSA Z662	Canadian Standards Association Standard Z662, Oil and Gas Pipeline (Systems latest version as amended from time to time)
ECCC	Environment and Climate Change Canada
GBA+	Gender-Based Analysis Plus
GHG	greenhouse gas



Abbreviation/Acronym	Definition
GIS	geographic information system
Guidelines	Tailored Impact Statement Guidelines
H ₂ S	hydrogen sulphide
HHRA	human health risk assessment
IAA	<i>Impact Assessment Act</i>
ISO	International Organization for Standardization
kPa	kilopascals
kt	kiloton
LSA	local study area
m	metre
m ³	cubic metre
MFFP	Ministère des Forêts, de la Faune et des Parcs
Minister	Minister of Environment and Climate Change
MJ/m ³	megajoules per cubic metre
MOP	maximum operating pressure
NAAQO	National Ambient Air Quality Objectives
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
O ₃	ozone
OHWM	ordinary high water mark



Abbreviation/Acronym	Definition
OPR	<i>Canadian Energy Regulator Onshore Pipeline Regulations</i>
PAH	polycyclic aromatic hydrocarbons
PM	particulate matter
PM _{2.5}	fine particulates smaller than 2.5 microns
PM ₁₀	respirable particulates of less than 10 microns
PPBoR	plans, profiles and books of reference
PPR	<i>Canadian Energy Regulator Processing Plant Regulations</i>
QA	quality assurance
Registry	Canadian Impact Assessment Registry
RSA	regional study area
SACC	Strategic Assessment of Climate Change
SARA	<i>Species at Risk Act</i>
SO _x	sulphur oxides
VC	valued component (including environmental, health, social, economic and potentially other elements of the natural and human environment)
VOC	volatile organic compound
WHO	World Health Organization



Part 1 – Tailored Impact Statement Guidelines

1. Introduction

The federal Impact Assessment process serves as a planning tool that considers a broad range of potential environmental, health, social and economic effects of designated projects identified by regulation or designated by the Minister of Environment and Climate Change (the Minister). Decisions are based on whether the potential adverse effects in areas of federal jurisdiction are in the public interest. The public interest determination is guided by the factors set out in the *Impact Assessment Act* (IAA) in section 63:

- the extent to which the project contributes to sustainability;
- the extent to which the adverse effects within federal jurisdiction and the adverse direct or incidental effects that are indicated in the impact assessment report in respect of the project are significant;
- the implementation of the mitigation measures that the Minister or the Governor in Council, as the case may be, considers appropriate;
- the impact that the project may have on any Indigenous peoples and any adverse impact that the designated project may have on the rights of the Indigenous peoples¹ of Canada recognized and affirmed by section 35 of the *Constitution Act, 1982*; and
- the extent to which the effects of the project hinder or contribute to the Government of Canada's ability to meet its environmental obligations and its commitments in respect of climate change.

A key element for the federal impact assessment process is the preparation of Tailored Impact Statement Guidelines² (the Guidelines). The Guidelines provide the proponent with directions and requirements for the preparation of an Impact Statement. The Gazoduq project (the project) proposed by Gazoduq Inc. is a designated project that is also regulated by the *Canadian Energy Regulator Act* (CER Act). In accordance with the IAA, the project will be assessed by an integrated review process. The Guidelines for the project were developed by the Impact Assessment Agency of Canada (the Agency) in coordination with the Canada Energy Regulator (the CER) and identify information requirements under both the IAA and the CER Act.

¹ These guidelines use the term “Indigenous peoples” to represent the “aboriginal peoples of Canada” which includes Indian, Inuit and Métis peoples as defined in subsection 35(2) of the *Constitution Act, 1982*, and “rights of Indigenous peoples” is used to reflect the full scope of Aboriginal and Treaty rights recognized and affirmed by section 35 of the *Constitution Act, 1982*.

² As set out in paragraph 18(1)(b) of the *Impact Assessment Act*.



The Guidelines were tailored for the project during the impact assessment Planning Phase. In this regard, the final version of the Guidelines has taken into account comments received during consultation with the public, Indigenous peoples, federal authorities and other participants. The comment period on the draft guidelines for the project was held from January 30 to March 10, 2020.

The Guidelines are divided into three parts. Part 1 is an introductory chapter. Part 2 sets out the integrated requirements of the IAA and the CER Act. As for Part 3, it sets out specific CER Act requirements that are necessary to make decisions related to this Act only. To this end, the proponent is encouraged to consult the [CER Filing Manual](#) for this Part (see section 10 “Part 3 – Reference documents”). If there are conflicting information requirements between CER guidance and the Agency guidance relative to overlapping elements of the IAA and the CER Act, the requirements and the guidance from the Agency take precedence.

The proponent may present the information in the Impact Statement in the manner it deems most appropriate. While the Guidelines do not prescribe a preferred structure for the Impact Statement, it is recommended to follow a structure similar to the Guidelines in order to facilitate the review of the Impact Statement and participation in the process.

Irrespective of the preferred structure for the Impact Statement, it is essential that the Impact Statement address all requirements outlined in the Guidelines. If the proponent does not submit the information required in the Guidelines, it should include an explanation justifying the exclusion. In order to facilitate the review of the Impact Statement, the proponent must provide a table of concordance that indicates where each requirement of the Guidelines is addressed. As an example, the proponent can refer to the Checklists found in annex to the [CER Filing Manual](#).

1.1. Factors to be considered in the impact assessment

The Guidelines correspond to factors to be considered in the impact assessment. These factors are listed in subsection 22(1) of the IAA and prescribe that the impact assessment of a designated project must take into account:

- (a) the changes to the environment or to health, social or economic conditions and the positive and negative consequences of these changes that are likely to be caused by the carrying out of the designated project, including:
 - (i) the effects of malfunctions or accidents that may occur in connection with the designated project;
 - (ii) any cumulative effects that are likely to result from the designated project in combination with other physical activities that have been or will be carried out; and
 - (iii) the result of any interaction between those effects;
- (b) mitigation measures that are technically and economically feasible and that would mitigate any adverse effects of the designated project;

- (c) the impact that the designated project may have on any Indigenous peoples and any adverse impact that the designated project may have on the rights of the Indigenous peoples of Canada recognized and affirmed by section 35 of the *Constitution Act, 1982*;
- (d) the purpose of and need for the designated project;
- (e) alternative means of carrying out the designated project that are technically and economically feasible, including through the use of best available technologies, and the effects of those means;
- (f) any alternatives to the designated project that are technically and economically feasible and are directly related to the designated project;
- (g) Indigenous knowledge provided with respect to the designated project;
- (h) the extent to which the designated project contributes to sustainability;
- (i) the extent to which the effects of the designated project hinder or contribute to the Government of Canada's ability to meet its environmental obligations and its commitments in respect of climate change;
- (j) any change to the designated project that may be caused by the environment;
- (k) the requirements of the follow-up program in respect of the designated project;
- (l) considerations related to Indigenous cultures with respect to the designated project;
- (m) community knowledge provided with respect to the designated project;
- (n) comments received from the public;
- (o) comments from a jurisdiction that are received in the course of consultations conducted under section 21 of the IAA;
- (p) any relevant assessment referred to in sections 92, 93 or 95 of the IAA;
- (q) any assessment of the effects of the designated project that is conducted by or on behalf of an Indigenous governing body and that is provided with respect to the designated project;
- (r) any study or plan that is conducted or prepared by a jurisdiction—or an Indigenous governing body not referred to in paragraph (f) or (g) of the definition *jurisdiction* in section 2 of the IAA—that is in respect of a region related to the designated project and that has been provided with respect to the project; and
- (s) the intersection of sex and gender with other identity factors.

In accordance with paragraph 22(t) of the IAA, any other matter relevant to the impact assessment that the Minister would require to be taken into account would be detailed in the Terms of Reference for the Integrated Review Panel.

The scope of the factors in paragraphs 22(1)(a) to (f), (h) to (l), and (s) that are to be taken into account, including the extent of their relevance to the impact assessment, is determined by the Agency and is outlined in Part 2 below.



For an integrated review panel process with the CER, the following factors listed in subsection 183(2) of the CER Act³ also apply:

- (a) the environmental effects, including any cumulative environmental effects;
- (b) the safety and security of persons and the protection of property and the environment;
- (c) the health, social and economic effects, including with respect to the intersection of sex and gender with other identity factors;
- (d) the interests and concerns of the Indigenous peoples of Canada, including with respect to their current use of lands and resources for traditional purposes;
- (e) the effects on the rights of the Indigenous peoples of Canada recognized and affirmed by section 35 of the *Constitution Act, 1982*;
- (f) the availability of oil, gas or any other commodity to the pipeline;
- (g) the existence of actual or potential markets;
- (h) the economic feasibility of the pipeline;
- (i) the financial resources, financial responsibility and financial structure of the applicant, the methods of financing the pipeline and the extent to which Canadians will have an opportunity to participate in the financing, engineering and construction of the pipeline;
- (j) the extent to which the effects of the pipeline hinder or contribute to the Government of Canada's ability to meet its environmental obligations and its commitments in respect of climate change;
- (k) any relevant assessment referred to in section 92, 93 or 95 of the *Impact Assessment Act*; and;
- (l) any public interest that the Commission considers may be affected by the issuance of the certificate or the dismissal of the application.

The proponent is required to provide the information in a machine-readable, accessible format, in order to support the Government of Canada's commitment to open science and data and facilitate the sharing of information with the public through the Canadian Impact Assessment Registry (the Registry), the Agency's Internet site, and the Government's open science and data platform. The proponent should contact the Agency to obtain additional direction regarding the format and distribution of the Impact Statement.

³ For the project's impact assessment, terms specific to the CER Act may appear in the Guidelines when referring directly to it. The following terms are equivalent: the Commission is the review panel, the applicant is the proponent, and the application may be the impact assessment in the context of the document submitted to the Agency for review under the IAA and the CER Act.



Part 2 – Tailored Impact Statement Guidelines – Content

The Tailored Impact Statement Guidelines (the Guidelines) present the type of information required in the Impact Statement for the Gazoduq project.

Each section represents a category of information and provides:

- general guidance on how to collect, analyze and present the information, including some examples of what to consider; and
- a comprehensive list of specific information requirements that may be included in the Guidelines.

1. Overview

1.1. Proponent

The Impact Statement must:

- provide contact information of proponent representatives for the project (e.g. name, address, phone, fax, email);
- identify the proponent(s) and, where applicable, the name of the legal entity(ies) that would develop, manage and operate the project;
- describe the corporate structure, including roles and responsibilities of key personnel;
- specify the mechanism used to ensure that corporate policies will be implemented and respected for the project; and
- identify key personnel, contractor, and/or sub-contractors responsible for preparing the Impact Statement.

1.2. Project overview

The Impact Statement must describe the project, including physical project activities and key components, scheduling details, implementation milestones and any other key features.

The list of the project's key physical activities was drafted based on the detailed project description. The project is defined as the physical activities related to the construction, operation, decommissioning and abandonment of a new natural gas pipeline, and their incidental physical activities (designated project). The following physical activities are incidental to the designated physical activities and are thus part of the project:

- three compressor stations;
- one metering station;
- all block valve stations (about 25) on the natural gas pipeline;
- all pipeline inspection facilities, including the launcher stations (4) and receiver stations (4);
- the operations control centre; and
- all ancillary facilities (e.g. surveillance system, data control and acquisition system, cathodic protection system).

The new natural gas pipeline would connect TC Energy's main natural gas pipeline network in northeast Ontario to a natural gas liquefaction, storage and export complex in Saguenay, Quebec (the Énergie Saguenay project). The proponent, Gazoduq Inc. submitted an initial project description of a pipeline project under the IAA in October 2019, thus triggering the Planning Phase of the impact assessment.

In November 2015, the proponent, GNL Québec Inc., submitted to the Agency (former Canadian Environmental Assessment Agency) a project description for the Énergie Saguenay project including a new natural gas liquefaction and storage facility and a new maritime terminal in Saguenay, Quebec. This project's environmental assessment, carried out by the Agency under the *Canadian Environmental Assessment Act, 2012*, started in January 2016 and is still underway.

In keeping with the transitional provisions of the IAA, the environmental assessment of GNL Québec Inc.'s project must be done in accordance with the *Canadian Environmental Assessment Act, 2012*. Consequently, the effects of the Énergie Saguenay project, including marine shipping and effects related to areas of federal jurisdiction, and the effects of the Gazoduq project will be assessed as part of separate federal assessment processes. However, the cumulative effects of both projects, combined with those of other physical activities, past or future, will be assessed as part of the assessments of each project.

1.3. Project location

The Impact Statement must describe the geographical setting and socio-ecological context in which the project is to take place. The description should focus on aspects of the project and its setting that are important in order to understand the potential environmental, health, social and economic effects of the project. The following information must be included and, where appropriate, located on maps:

- the geographic coordinates (latitude and longitude according to international conventions in degrees, minutes and seconds) of the pipeline's start and end points;
- the surface areas, location and spacing of the project components, including workers' camps, block valve stations, access roads and other surface areas affected by the installation of stations, valves, power sources, transport and other activities generated indirectly. Also include the location of the operations control centre;
- services and infrastructure and land and aquatic uses in the area, including:
 - resource development projects already under way in the study area (e.g. mining or forestry operations);

- roads;
- municipalities and administrative regions; and
- agricultural zone components;
- distance of the project components to any federal lands and the location of any federal lands within the regional study area;
- all waterbodies (permanent and temporary) and watersheds affected by the project;
- navigable waters;
- the environmental significance and value of the geographical setting in which the project will take place and the surrounding area;
- environmentally sensitive areas, such as national, provincial, territorial and regional parks, UNESCO World Heritage Sites, ecological reserves, ecologically and biologically sensitive areas, wetlands, estuaries, and habitats of federally or provincially listed species at risk and other sensitive areas;
- lands subject to conservation agreements;
- description and locations of all potable drinking water sources (i.e. natural, municipal or private);
- description of local and Indigenous communities;
- Indigenous traditional territories and/or consultation areas, Treaty and/or Title lands, lands in a reserve within the meaning of subsection 2(1) of the *Indian Act*, Indigenous and Métis harvesting regions (with permission of Indigenous peoples);
- if the information is available, the surface area (in hectares) of traditional or Title lands required to identify the project's land tenure by component;
- current areas of land and resource use for traditional purposes used by Indigenous peoples and a list of uses; and
- culturally important features of the landscape (e.g. factors of significance in the physical and cultural heritage of communities, including Indigenous communities).

Maps are to be provided to the Agency as electronic geospatial data files compliant with the requirements set out in section 6 "Baseline conditions".

1.4. Regulatory framework and the role of government

The Impact Statement must identify:

- any federal power, duty or function that may be exercised that would permit the carrying out (in whole or in part) of the project or associated activities, including the nature of the request being made by the proponent as outlined in Part 3, section 2 "Action requested".
- legislation and other regulatory approvals that are applicable to the project at the federal, provincial, regional and municipal levels or from any body—including a co-management body—established under a land claim agreement referred to in section 5 of the *Constitution Act, 1982*, or from an Indigenous

governing body as defined in the IAA that has powers, duties or functions in relation to the effects of a project;

- a list of federal, provincial or territorial legislation, regulations or policies on greenhouse gas (GHG) applicable to the project in accordance with the Strategic Assessment of Climate Change (SACC);
- government policies, resource management plans, planning or study initiatives relevant to the project and impact assessment and their implications, including relevant regional studies and strategic assessments;
- any treaty, self-government, land claims or other agreements between federal or provincial governments and Indigenous peoples that are pertinent to the project or the impact assessment;
- the existing Indigenous governance systems and Indigenous laws relevant to the project or the impact assessment, as identified by Indigenous peoples;
- any relevant land use plans, land zoning, or community master plans;
- information on land lease agreement or land tenure, when applicable; and
- municipal, regional, provincial and/or national objectives, standards, regulations or guidelines that have been used by the proponent to assist in the evaluation of any predicted environmental, health, social or economic effects or impacts.

1.5. Qualifications of individuals preparing the Impact Statement

The proponent must provide information on the individuals who prepared the sections of the Impact Statement related to environmental, economic, social and health effects and impacts on Indigenous peoples. The proponent is required to demonstrate that qualified individuals have prepared the information or studies provided. Where possible, the proponent should use experts who are members of a professional body or recognized association. A qualified individual would include someone who, through education, experience or knowledge relevant to a particular matter, may be relied upon by the proponent to provide advice within a given area of expertise. Knowledge relevant to a particular matter may include Indigenous and community knowledge.

2. Project description

2.1. Project components

The Impact Statement must describe the designated project, by describing the project components, associated and ancillary works, and other characteristics to assist in understanding the potential environmental, health, social and economic effects, and impacts on Indigenous peoples and rights or interests of Indigenous peoples, as identified by the Indigenous people(s). This description must be supported with maps of key project components, boundaries of the proposed site with geographic



coordinates, major existing infrastructure, proponent lands, and leased properties or lands, adjacent resource lease boundaries, adjacent land uses and any important environmental features.

The Impact Assessment must provide the overall plan and description of all project components at an appropriate scale, including but not limited to:

- the pipeline corridor, workspace and storage areas, compressor stations, metering stations, block valves, the control centre, inspection facilities and other related equipment (including footprint, dimensions, capacities, pressures, etc.);
- other physical facilities and activities required for the construction of the pipeline, including auxiliary facilities directly related to the project, such as access roads, including temporary and permanent water crossings, construction site camps, and pipe laydown and storage areas; and
- permanent and temporary linear infrastructures such as the pipeline right-of-way, access roads and routes, railways, power supply and electrical transmission lines.

Project components may also include:

- water management infrastructure to divert, control, collect and discharge surface drainage and groundwater seepage to the receiving environment;
- diversions/realignments of waterbodies;
- water crossings, including bridges and culverts;
- construction workspace and laydown areas;
- storage areas for fuels, explosives and hazardous wastes;
- sources of drinking water and industrial water;
- waste disposal (types of waste, methods of disposal, quantity);
- remediation of construction areas and project site;
- fencing and gates;
- administrative buildings;
- worker camps;
- borrow pits and quarries;
- fill and backfill (volumes, source, transport, storage and disposal); and
- any other infrastructure relevant to the project.

2.2. Project cost estimates

The Impact Statement must provide an estimate of the total capital costs and incremental operating costs, and changes to cost estimates, where applicable, for costs associated with the following:

- pipelines;
- compression;



- metering and regulating;
- tankage;
- other facilities;
- allowance for funds used during construction including rates used;
- insurance and safeguards that will be implemented to perform the work and protect the environment;
- facilities operation and maintenance activities;
- site closure and rehabilitation activities; and
- capitalized overhead, showing a separate breakdown of the main cost elements such as materials, installation, land and land rights.

In addition, the proponent is encouraged to provide indication of sufficient financial security to ensure the execution of restoration, monitoring and maintenance of site integrity and of remaining structures.

2.3. Project activities

The Impact Statement must include descriptions of project activities to be carried out during each project phase, the location of each activity and the activity's duration, magnitude and scale.

The Impact Statement must provide a complete list of project activities and focus on activities with the greatest potential to have environmental, health, social and economic effects, or impacts on Indigenous people and rights and interests of Indigenous peoples, as determined by Indigenous peoples. Sufficient information must be included to adequately predict positive and adverse effects, the interaction between those effects and any disproportionate effects for diverse subgroups and within communities.

The information must be sufficient to provide an analysis regarding the project's effects in the context of potential interaction between valued components (VC). The Impact Statement must highlight activities that involve periods of increased disturbance to environmental, health, social and economic conditions or impacts on Indigenous peoples. It must include a schedule including time of year, frequency, and duration for all project activities for all phases of the project.

The Impact Statement must include a summary of the changes that have been made to the project since it was originally proposed in the Detailed Project Description, including the reasons for these changes. Information on project activities must include, where applicable, a description of the elements listed below.

2.3.1. Site preparation and construction

- construction staging, including surveying of right-of-way and work areas;
- excavation of topsoil, soil and bedrock, including potentially acid-generating and metal-leaching materials;
- blasting (frequency, time of year, time of day and methods);
- transportation, manufacture, storage and management of explosives;



- clearing of transmission corridor and construction of powerline to site, where appropriate, as well as construction of temporary and permanent infrastructure (garages, administrative buildings, compressor, metering and operations control stations, etc.);
- construction of access roads;
- installation of fences and gates;
- changes to existing infrastructure (e.g. relocation of service lines or roads);
- activities (including temporary structures and the use of explosives) affecting the terrestrial, riparian and aquatic environment, including those carried out in intermittent streams and flood prone areas;
- transportation and management of borrow material (source and quantity);
- temporary and permanent areas for stockpiling and storing materials in the right-of-way (e.g. arable topsoil in agricultural areas, etc.);
- transportation of pipeline construction materials, equipment and related infrastructure;
- routing and stringing of pipes in the right-of-way, along the alignment;
- coating of pipeline pipes, if carried out on site;
- the preparation, excavation of the trench, installation and burial of pipeline pipes and other underground components, as well as backfilling and compacting;
- bending, welding, inspection and coating of pipeline welds;
- installation of block valves;
- installation of cathodic protection system to prevent corrosion;
- work related to temporary or permanent waterbody or watercourse crossings (bridge or culvert);
- water crossing and crossing of obstacles using the appropriate methods, including but not limited to trenched (isolated, open-cut, etc.) and trenchless (horizontal directional drilling, microtunneling, etc.) crossings;
- water management, including water diversions, dewatering or deposition activities, and runoff management (location, methods, timing);
- performance and certification of leak tests and hydrostatic tests, including cleaning, filling, drying and final tie-ins;
- water requirements for hydrostatic testing (identification of sources: local waterbodies or other sources for water withdrawal), estimate of quantities needed, management and treatment of wastewater and discharge points;
- operation of light duty, heavy-duty and mobile off-road equipment (type, quantity);
- worker camps (capacity, drinking water supply, wastewater treatment);
- transportation of employees;
- storage, management and disposal of hazardous materials, fuels and waste (types, methods, quantity);
- as appropriate, line locating to detect and mark existing underground works in or near the right-of-way (pipes, cables, drains, etc.);

- clearing, grubbing, stripping and grading of site, including right-of-way and work areas;
- site restoration (right-of-way, work areas, stockpiling, storage and other areas reworked during construction work), including, where appropriate, reconnection of drainage systems impacted by construction work, etc.; and
- lighting requirements during the project's construction and operation activities for all fitted sites required during the construction phase (construction camps, work space, storage area, workers' camps, etc.) as well as for all permanent sites and facilities required during the operation phase.

2.3.2. Operation

- commissioning of pipeline;
- operation of pipeline and other facilities and activities, such as compressor stations, metering, storage, transportation, maintenance of the right-of-way, developments and facilities;
- inspection and surveillance of the pipeline, including verification of the pipeline's condition and integrity, detection of possible leaks, verification of the cathodic corrosion protection system, etc.;
- maintenance of the right-of-way and maintenance of grass cover to prevent tree regrowth;
- maintenance and, where appropriate, upgrading of aboveground infrastructures and buildings housing them;
- use and maintenance of access roads, including the frequency of their maintenance ;
- storage and handling of petroleum products, hazardous materials and waste, as appropriate;
- runoff management at permanent facilities and in material storage and handling areas;
- waste management; and
- workforce management, including transportation, work schedules and lodging.

2.3.3. Decommissioning and abandonment

The Impact Statement must include sufficient information on decommissioning and abandonment activities for the purpose of the impact assessment. A separate impact assessment specific to decommissioning and abandonment activities may be required by the CER at the time the facilities are closed or decommissioned.

For the purposes of the Impact Statement, the proponent must provide a preliminary plan for the decommissioning and abandonment of any components associated with the project. Information on the following components and activities must be included:

- ownership or transfer, if applicable, and control of the different project components;
- final site restoration, including a description of the native plant species that will be used to revegetate the sites;
- removal of contamination from facilities and equipment;
- dismantling and removal of equipment and systems;

- demolition of buildings and ancillary structures;
- remediation of project site;
- long-term care, monitoring and maintaining the integrity of the site and any remaining structures;
- abandonment or decommissioning of temporary or permanent facilities; and
- transfer of fuels, hazardous materials and waste to off-site locations.

2.4. Workforce requirements

The Impact Statement must describe the anticipated labour requirements, employee programs and policies, and workforce development opportunities for the designated project, including:

- opportunities for employment outlining the anticipated number of full-time and part-time positions to be created and how this can change during the project;
- anticipated workforce region of origin (i.e. local, regional, out-of-province or international employees), as well as criteria for favouring the local and Indigenous workforce;
- the skill and education levels required for the positions, and the capacity of the existing local and Indigenous workforce;
- investment in training opportunities, including investments anticipated for Indigenous peoples;
- expected workforce requirements based on the National Occupational Classification system and timelines for employment opportunities;
- working conditions and anticipated work scheduling for construction and operation (e.g. hours of work, rotational schedules, workers' modes of travel to work sites, fly-in/fly-out);
- anticipated hiring policies, including hiring programs;
- workplace policies and programs for Indigenous employment, workforce diversity and employment of women and other underrepresented groups;
- employee assistance programs and benefits programs; and
- workplace policies and programs including codes of conduct, workplace safety programs and cultural training programs.

In addition to the above, the analysis of workforce requirements must take Gender Based Analysis Plus (GBA+)⁴ into consideration. It must specify how hiring policies and programs, access to employment and training opportunities, investment in training and workplace policies and programs take into account vulnerable or underrepresented groups, including Indigenous peoples or other relevant community subgroups (e.g. women, youth, seniors).

3. Project purpose, need and alternatives considered

The proponent must identify the purpose of the project and alternative means of carrying it out. Also, the proponent must analyze and take into account the need for the project and alternatives to the project in its Impact Statement. The proponent should consult Agency guidance documents, particularly the documents [Guidance: "Need for", "Purpose of", "Alternatives to" and "Alternative Means"](#) and [Policy Context: "Need for", "Purpose of", "Alternatives" and "Alternative Means"](#).

3.1. Purpose of the project

The Impact Statement must outline what is to be achieved by carrying out the project. The Impact Statement should broadly classify the project (e.g. pipeline intended for export) and indicate the target market (e.g. international, domestic, local, etc.). The “purpose of” statement should include any objective the proponent has in carrying out the project. The proponent is encouraged to consider the perspectives of participants (i.e. public, Indigenous peoples, governments) in establishing objectives that relate to the intended effect of the project on society.

The proponent must also discuss:

- the possibility that the facilities could be converted in the future to transport products other than natural gas; and
- the options or scenarios in which the purpose of the project could change, for example, assessing a scenario where there would be a change in the customer(s) served.

⁴ Gender Based Analysis Plus (GBA+) provides a framework to describe the full scope of potential adverse and positive effects under the IAA. GBA+ is an analytical framework that guides practitioners, proponents and participants to ask important questions about how designated projects may affect diverse or potentially vulnerable population groups. These guidelines refer to “various subgroups” in the context of GBA+, either in reference to groups within the general population or within communities. The Agency’s guidance document [Gender-Based Analysis Plus in Impact Assessment](#) provides guiding principles to allow proponents to use this analytical framework in their Impact Statement.

3.2. Need for the project

The Impact Statement must describe the underlying opportunity or issue that the project intends to seize or solve and should be described from the perspective of the proponent. The proponent should provide supporting information that demonstrates the need for the project. The information provided should make it possible to reasonably conclude that there is an opportunity or issue that warrants a response and that the proposed project is an appropriate approach. The proponent should report the comments or views of Indigenous peoples, the public and other participants on the proponent's need statement.

The Impact Statement must provide the following information:

- an assessment of the need for and viability of the project in relation to the demand for natural gas, including an evaluation of the national and global demand for natural gas during the operating years of the project. Taking into account the current climate context, the evaluation of the need for the project should:
 - include the validation of the proponent's assumption that gas could replace more polluting energy sources;
 - take into account the potential for international markets to significantly reduce their demand for fossil fuel energy in the coming years; and
 - take into account the possibility of a decline of renewable energy prices.

3.3. Alternatives to the project

In addressing alternatives to the project, the Impact Statement must provide a description of the functionally different ways that are technically and economically feasible to meet the stated project need and achieve the project purpose from the perspective of the proponent. For these technically and economically feasible alternatives to the project, the Impact Statement must provide sufficient information for the selection of alternatives to the project. The process of identifying and considering alternatives to the project must consider the views, information and knowledge from Indigenous peoples, the public and other participants, as well as existing studies and reports. The Impact Statement must present a rationale for selecting the proposed project over other options.

The analysis of alternatives to the project should serve to validate that the preferred alternative for the project is a reasonable approach to meeting the need and purpose and is consistent with the aims of the IAA.

3.4. Alternative means of carrying out the project

The Impact Statement must identify and consider the potential environmental, health, social and economic effects and the impacts on the rights and interests of Indigenous peoples of alternative means of carrying out the project that are technically and economically feasible.



For the selection of the alternative means of carrying out the project, the Impact Statement must first of all describe:

- the criteria to determine technical and economic feasibility of possible alternative means;
- the best available technologies considered and applied in determining alternative means;
- all alternative means that are technically and economically feasible, presented in sufficient and appropriate detail; and
- the particularities of each alternative means and their potential adverse and positive environmental, health, social and economic effects, and their impacts on the rights and interests of Indigenous peoples, as identified by Indigenous peoples.

The Impact Statement must then describe:

- the preferred alternative means of carrying out the project based on the consideration of environmental, health, social and economic effects, the impacts on the rights and interests of Indigenous peoples, technical and economic feasibility, and the use of best available technologies; and
- the methodology and criteria that were used to compare the alternative means, to determine the preferred means of carrying out the project, and to justify the exclusions of other solutions, based on the trade-offs associated with the preferred and other alternative means.

The application of GBA+ to the analysis of alternative means of carrying out the project is necessary to inform how effects may vary for various subgroups (e.g. by gender, age, ethnicity, socio-economic status, health status, etc.). The proponent must also take into account the views and information provided by Indigenous peoples, the public and other participants in establishing criteria for comparing the project's alternative means.

The proponent must indicate how the concerns of Indigenous peoples have been considered in the analysis of alternative means of carrying out the project, including how the criteria were defined and applied in the selection of alternatives. Among others, the criteria used for project routing options must take into account the potential effects and impacts on Indigenous peoples, for example, in terms of resource and land uses, valued landscapes, and sensitive sites.

In its alternative means analysis, the proponent must address all project elements, such as:

- route or corridor for the transportation of natural gas;
- route or corridor for electrical transmission lines;
- location of compressor stations, meter stations and other project infrastructure;
- access to the project site;
- location of key project components;
- facility design;
- excavation and drilling methods;
- number and importance of waterbodies and watercourses to be crossed (size, sensitivity, etc.);



- construction and crossing methods for waterbodies, watercourses, wetlands and other obstacles or infrastructure;
- energy sources to power the project site and other stationary sources to provide heat or steam to the project;
- management of water supply and discharge sites for hydrostatic testing;
- waste management;
- management of excavated materials, including potentially acid-generating or leachable materials;
- disposal of drilling mud and cuttings or produced water;
- water supply management;
- wastewater management;
- construction alternatives;
- timing options for various components and phases of the project; and
- abandonment or decommissioning options.

If applicable, the assessment of alternatives should include, but not be limited to, the following information sources:

- any strategic or regional assessment;
- any study or plan conducted or prepared by a jurisdiction, or an Indigenous governing body, related to the area affected by the project and provided with respect to the project;
- any relevant assessment of the effects of the project that is conducted by or on behalf of an Indigenous governing body and that is provided with respect to the project;
- Indigenous knowledge, community knowledge, comments received by the public, comments received from jurisdictions; and
- other studies or assessments realized by other proponents.

4. Description of public participation and views

The proponent must work with local communities, associations and stakeholders. Engagement activities must be inclusive and ensure that interested members of the public have an opportunity to share their views. They must also consider the language needs, with regards to official languages, of the people being engaged. Particular attention must be paid to the engagement of individuals and communities that have rights and interests in the lands affected by the proposed project.

4.1. Engagement activities

The Impact Statement must describe the proponent's ongoing and proposed public engagement activities regarding the project.

The Impact Statement must provide a description of efforts made to distribute project information and provide a description of information and materials that were distributed during the consultation process. The Impact Statement must indicate, for example, the methods used, where the consultation was held, the persons, organizations and diverse groups consulted, the views expressed and the extent to which this information was incorporated in the design of the project as well as in the Impact Statement.

The proponent should consult Agency guidance documents on this topic, particularly: [*Interim Framework: Public Participation Under the Impact Assessment Act*](#), and [*Interim Guidance: Public Participation under the Impact Assessment Act*](#).

4.2. Analysis and response to questions, comments and issues raised

The Impact Statement must provide a summary of key issues related to the project and that were identified through engagement with the public, as well as the potential environmental, health, social and economic effects, including disproportionate effects, for diverse subgroups within the population. The Impact Statement must describe any questions and comments raised by the public and how they influenced the design, construction or operation of the project. The Impact Statement must identify the alternative means, mitigation measures or the monitoring and follow-up programs identified to deal with public uncertainties. The Impact Statement must identify public concerns that have not been addressed, if any, and provide the reasons why they have not been.

In addition to the activities carried out as part of the impact assessment, an engagement program specific to the project must be developed by the proponent and included in the Impact Statement. The engagement program should enable the proponent to anticipate, prevent, mitigate and manage conditions that may affect individuals, groups or communities. The engagement program should be integrated into the proponent's management system to ensure the protection of the public, employees, assets and the environment throughout the life cycle of the project (i.e. design, construction, operation, maintenance and abandonment). The engagement program should be based on the usual elements of a management system, such as those described in the *Canadian Energy Regulator Onshore Pipeline Regulations (OPR)*. The engagement program should include the proponent's policy or vision for engagement and set out the principles and goals that will guide the proponent on this topic.

4.3. Private lands analysis and potentially affected stakeholders

In addition to the general public engagement approach, the Impact Statement must describe how the proponent identified and consulted specific individuals and communities that have rights or interests on the lands affected by the project. These rights and interests may be affected by:

- the use of one or more current rights-of-way by the proponent for the project;
- the acquisition or rental of land;
- the development of temporary work areas, which may be adjacent, or access to these;
- the project's crossing of third-party infrastructure;
- land rights, registered or not; and
- regulatory area operating activities.

The proponent must also contact residents, land users and other persons likely to be affected by the project in order to keep them informed. For example:

- persons who may be affected by nuisances (noise, dust, traffic, etc.) resulting from the construction and operation of the facilities;
- persons who have registered or recognized hunting, trapping or guiding areas, as well as recreational and commercial fishing areas;
- users of parks and recreational areas (including local, provincial or territorial parks and areas recognized as scenic); and
- persons residing in the emergency planning zone.

5. Description of engagement with Indigenous peoples

As part of an impact assessment process under the IAA, the proponent must collaborate with Indigenous peoples in completing its Impact Statement, and throughout the lifecycle of the project if it is approved. For the purposes of the Impact Statement the proponent must, among other things:

- collect available Indigenous knowledge and expertise and integrate it into its Impact Statement, just as it integrates scientific knowledge;
- share project information frequently and transparently with Indigenous peoples;
- support the participation of Indigenous peoples in the completion of the Impact Statement, which could include funding studies conducted by Indigenous peoples who will have demonstrated interest in this regard;

- cooperate with Indigenous peoples to identify preferred mitigation measures to eliminate, reduce, limit or offset the project's adverse effects on VCs and on their rights and interests, as well as to optimize the project's benefits for their communities; and
- conduct a preliminary assessment of potential effects on the rights and interests of Indigenous peoples that cannot be mitigated. The proponent is not responsible for evaluating the severity of these effects, but is responsible for discussing them with the Indigenous peoples consulted about the project and giving Indigenous peoples the opportunity to draw their own preliminary conclusions in the Impact Statement, if they so choose, at this stage of the impact assessment process.

The proponent must consult the Agency's guidance documents on Indigenous participation and engagement, which are available in the [Practitioner's Guide to Federal Impact Assessments under the Impact Assessment Act](#). The proponent is expected to follow and refer to the guidance provided in the following documents throughout the Impact Statement:

- [Policy Context: Indigenous Participation in Impact Assessment](#);
- [Guidance: Indigenous Participation in Impact Assessment](#);
- [Policy Context : Assessment of Potential Impacts on the Rights of Indigenous Peoples](#);
- [Guidance: Assessment of Potential Impacts on the Rights of Indigenous Peoples](#);
- [Guidance: Collaboration with Indigenous Peoples in Impact Assessments](#);
- [Guidance: Indigenous Knowledge under the Impact Assessment Act: Procedures for Working with Indigenous Communities](#); and
- [Guidance: Protecting Confidential Indigenous Knowledge under the Impact Assessment Act](#).

Specific expectations for the participation and engagement of Indigenous peoples are included in the sections of these guidelines dealing with establishing baseline conditions, the assessment of potential effects on VCs, and the analysis of the potential impacts on the rights and interests of Indigenous peoples.

5.1. Analysis of potentially affected Indigenous peoples

The proponent will engage the Indigenous peoples identified⁵ by the Crown listed below to understand the concerns and potential adverse impacts of the project on the rights of Indigenous peoples.

⁵ The list of Indigenous peoples identified here may change as knowledge of the effects and potential impacts of the project is gained, or if the project or its components are modified during the impact assessment. The Agency reserves the right to modify this list based on additional information gathered during the impact assessment.

**Table 1: Crown List of Indigenous peoples to be consulted**

Province	Indigenous peoples
QC	Algonquins of Barriere Lake
QC	Communauté Anicinape de Kitcisakik
QC	Nation Anishnabe du Lac Simon
QC	Première Nation Abitibiwinni
QC	Conseil des Atikamekw de Manawan
QC	Conseil des Atikamekw de Wemotaci
QC	Conseil des Atikamekw d'Opitciwan
QC	Cree First Nation of Waswanipi
QC	Cree Nation of Waskaganish
QC	Grand Council of the Crees (Eeyou Istchee) / Cree Nation Government
QC	Kebaowek First Nation
QC	Kitigan Zibi Anishinabeg
QC	Long Point First Nation
QC	Nation huronne-wendat
QC	Première Nation des Essipiunnuat (Essipit)
QC	Première Nation des Innus de Pessamit
QC	Première Nation des Pekuakamiulnuatsh (Mashteuiatsh)
QC	Timiskaming First Nation
QC	Wolf Lake First Nation
ON	Flying Post First Nation
ON	Matachewan First Nation



Province	Indigenous peoples
ON	Mattagami First Nation
ON	Métis Nation of Ontario
ON	Taykwa Tagamou Nation (New Post)
ON	Temagami First Nation
ON	Wahgoshig First Nation

For the purposes of good governance, the Agency also plans to share information and discuss the potential effects and impacts of the project with the Indigenous peoples listed below. At a minimum, the proponent will make available to the following Indigenous peoples a summary of key documents related to the impact assessment (Impact Statement, key findings, plain language summaries) and will ensure that their views are heard and recorded.

Table 2: Crown List of Indigenous peoples to be consulted for good governance reasons

Province	Indigenous peoples
QC	Cree Nation of Washaw Sibi
ON	Beaverhouse Indigenous Community

At the request of the Indigenous peoples, the Agency will coordinate its consultation activities with the communities and Tribal Council that are outlined in the table below. The proponent is encouraged to do the same if the communities so desire. These communities are made up of First Nations that have come together for a variety of reasons, including coordinating consultation activities for greater efficiency and information sharing. Mamo Aki Limited Partnership is made up of First Nations that will make their decisions independently and distinctly, including Wahgoshig, Abitibiwinni, Anishnabe of Lac Simon, Atikamekw of Opitciwan, Atikamekw of Wemotaci, Pekuakamiulnuatsh, Innu Essipit and Innu of Pessamit. The Flying Post, Matachewan and Mattagami First Nations form part of the Wabun Tribal Council.

Table 3: Crown List of Indigenous community and Tribal Council to be consulted

Province	Communities and Tribal Council
QC/ON	Mamo Aki Limited Partnership
ON	Wabun Tribal Council



If the proponent is aware of potential adverse effects on an Indigenous people that is not listed above, the proponent is required to notify the Agency and the review panel, once appointed, as soon as it has the opportunity to do so.

The Impact Statement must provide the following:

- a list of potential effects on environmental, health, social and economic conditions of each Indigenous peoples;
- the rights or interests of each Indigenous peoples, that the peoples themselves have identified, that may be impacted by the project;
- the sources of information; and
- an analysis of the extent of the potential effects on each Indigenous peoples, and the views of Indigenous peoples regarding the extent of impact on the exercise of rights.

It is recommended that the proponent organize and analyze information relevant to each Indigenous peoples in separate sections for each one potentially affected by the project, either by nation, community, or other grouping based on the preference expressed by those people. Where applicable, the information and analysis must also be sufficiently disaggregated to support the GBA+ analysis of disproportionate effects (see section 6 for more details on GBA+). In all cases, ethical guidelines and culturally appropriate protocols governing research, data collection and confidentiality must be followed. This is particularly important in the case of information collected and studies conducted with vulnerable subgroups.

It is recognized that there is overlap between the information required in the guidelines, and the way in which information is requested for the sections specific to each Indigenous peoples. For effects of a general nature on a VC, such as physical health, the analysis can be summarized under the health section that applies generally, but go into greater depth regarding each indigenous peoples in the separate sections for each Indigenous community, where the context specific to that people is described in detail. The location and level of detail of the information in the Impact Statement will depend on its importance to the selected VCs, but it is expected that there will be some repetition between sections.

5.2. Record of engagement

The Impact Statement must provide a record of engagement that describes all efforts, successful and unsuccessful, taken to seek the views of each potentially affected Indigenous peoples with respect to the project. This record of engagement is to include all engagement activities undertaken prior to the submission of the Impact Statement during the Planning Phase and in the preparation of the Impact Statement.

The Record of engagement must include:

- the list of Indigenous peoples engaged by the proponent, including those which the proponent was unsuccessful in engaging;

- the engagement activities undertaken with each Indigenous peoples, including the date, means and results of engagement, including a description of the outcomes of conversations with each Indigenous people about how they wish to be consulted by the proponent;
- the list of the consultation protocols adopted by Indigenous peoples, if applicable. A copy of the consultation protocols must be attached as an appendix;
- an explanation for cases where engagement efforts have proven unsuccessful;
- a description of the preferred methods for sharing information, including alternative solutions implemented for people and locations where technological resources are limited;
- a description of how Indigenous expertise will be sought to assist with the carrying out of the project, should it be approved;
- a description of efforts to engage diverse segments of each Indigenous peoples in culturally appropriate ways, including groups identified by gender, age or other community relevant factors (e.g. hunters, trappers, and other harvesters) to support the collection of information needed to complete the GBA+;
- a description of how engagement activities by the proponent were intended to ensure Indigenous peoples were provided an opportunity to evaluate the project's potential positive and negative effects on their members, communities, activities, and impacts to rights, as identified by the Indigenous peoples. This could include activities aimed at providing appropriate capacity funding to support the creation and operation of community-driven communication mechanisms that facilitate the flow of information and the advancement of project efforts in each affected Indigenous community; and
- any agreements pertaining to engagement that are finalized or in progress, with anticipated timelines to complete.

The record of engagement must also indicate how the proponent has obtained or tried to obtain the free, prior and informed consent from the Indigenous peoples consulted on the project, regarding the information presented in the Impact Statement, as well as the project itself. The Record of engagement must demonstrate that the capacity needs of Indigenous peoples were taken into account, and that timelines were adequately communicated for the review of information in the Impact Statement, including, where applicable, specific procedures for drafting sections of the Impact Statement.

It is expected that the engagement activities for the preparation of the Impact Statement should be carried out with integrity and transparency, without conflicts of interest, in good faith, and conducted in a manner that is attentive to the concerns of Indigenous peoples and committed to producing mutually beneficial outcomes.

5.3. Analysis and responses to questions, comments and issues raised

The Impact Statement must provide an analysis of the input received from Indigenous peoples with respect to the project, as well as a description of how Indigenous peoples reviewed the information contained in the Impact Statement. This analysis should serve to inform the identification of potential effects and impacts on



any applicable VCs, and on the potential impacts on the rights and interests of Indigenous peoples, and also include the identification of mitigation and enhancement measures.

If the Indigenous peoples provide specific studies, the proponent must attach these as an appendix to the Impact Statement, but only if it has obtained the permission of the Indigenous peoples concerned to publish them. The proponent is also encouraged to work with Indigenous peoples who demonstrate an interest in drafting sections of the Impact Statement that concern them; including sections describing Indigenous knowledge, on the subject of current use of lands and resources for traditional purposes, on potential impacts to rights and interests, and for the identification of mitigation or enhancement measures. Where applicable, sections of the Impact Statement prepared by Indigenous peoples must be clearly identified as such.

The analysis in the Impact Statement must also include consideration of Indigenous knowledge provided by Indigenous peoples. As stated in the Agency's guidance documents concerning Indigenous knowledge, there exist many definitions related to Indigenous knowledge. Therefore the proponent must discuss with the concerned Indigenous peoples to understand and consider their definition of "Indigenous knowledge". Indigenous knowledge that is not already publicly available or where written consent has not been provided by the Indigenous people should not be included. Permission from the Indigenous people should be sought before including Indigenous knowledge in the Impact Statement, regardless of the source of the Indigenous knowledge. The guidance document [*Protecting Confidential Indigenous Knowledge under the Impact Assessment Act*](#), to which the proponent must refer, describes the approaches to be favoured.

Indigenous knowledge is holistic and in impact assessment, it can provide insights related to knowledge of the biophysical environment, as well as social, cultural, economic, and health aspects, Indigenous governance and resource use. It is important that Indigenous knowledge be included in all sections of the Impact Statement. Given the holistic nature of Indigenous knowledge, it may be presented in one section of the Impact Statement, rather than being broken down into the technical sections or chapters. However, if such an avenue is chosen, Indigenous knowledge must also be reflected in the relevant technical chapters. It is also important to capture the context in which Indigenous peoples provide their Indigenous knowledge and to convey it in a culturally appropriate manner. The Impact Statement must also document how the proponent responded to questions, comments and issues raised by Indigenous peoples, and how unresolved matters have been addressed in the Impact Statement. Any proposed mitigation measures are to be clearly linked, to the extent possible, to VCs in the Impact Statement as well as to project components or activities.

The Impact Statement must:

- describe the type of information received from Indigenous peoples (observations, questions, issues, comments, knowledge, expertise or other);
- describe how the information gathered during the Planning phase of the impact assessment of the project was included, including the documents uploaded to the Registry by Indigenous peoples during that phase of the impact assessment;
- main issues, questions and comments raised during the engagement activities by each Indigenous peoples and the proponent's responses, including how matters have been addressed in the Impact Statement or will be addressed in the future;

- indicate where and how the information received was integrated into or contributed to decisions regarding the project or its impact assessment (e.g. project design), including:
 - the construction, operation, decommissioning, abandonment and maintenance plans;
 - development and collection of baseline information;
 - the evaluation of alternatives to the project,
 - characterization of the nature of the predicted environmental, health, social and economic effects of the project for each Indigenous peoples; and
 - follow-up and monitoring;
- describe how Indigenous expertise and knowledge would be considered in carrying out the project, should the project be approved;
- include in the engagement program (see section 4.2), a component outlining the Indigenous engagement policy, as well as established policies and stated principles related to the collection of traditional knowledge and traditional land use information; and
- where potential impacts on the rights or interests of Indigenous peoples are identified, provide a description, for each Indigenous people separately, of how each potential impact would be avoided, mitigated, managed, or otherwise accommodated.

5.4. Collaboration with Indigenous peoples following the submission of the Impact Statement

The proponent must explain in the Impact Statement how it plans to continue to work with Indigenous peoples during subsequent phases of the impact assessment process and throughout the lifecycle of the project, if it is approved.

The Impact Statement must:

- describe the type of work the proponent intends to accomplish with Indigenous peoples during subsequent phases of the impact assessment process;
- describe how the proponent will commit to engaging local Indigenous communities in a discussion for any additional use of the pipeline right-of-way beyond the project description, where appropriate; and
- describe how Indigenous peoples will be involved in decision making processes related to the project throughout the lifecycle of the project.

For this section, the proponent may refer to information presented in other sections of the Impact Statement (e.g. section 25 “Follow-up programs”).



6. Baseline conditions

6.1. Methodology

The Impact Statement must provide a description of the environmental, health, social and economic setting directly and incidentally linked to the project. This should include the existing environmental, health, social and economic components, interrelations and interactions, as well as the variability in these components, processes and interactions over time scales and spatial boundaries appropriate to the project. Meaningful dialogue with communities and Indigenous peoples can provide useful input that may describe how these components and processes are interrelated, and can allow the establishment of a common understanding of the Indigenous knowledge perspective on the project's potential effects and impacts.

The information describing the baseline conditions may be collected in a stand-alone chapter in the Impact Statement or integrated in the specific VC sections, followed by, for example, clearly identified sections that focus on the effects assessment on that VC and the interactions between the effects, the identification of mitigation measures, the residual effects analysis and the cumulative effects assessment.

The application of GBA+ to baseline condition descriptions is necessary to disaggregate and specify baseline conditions for diverse subgroups, including the subgroups that exist within Indigenous peoples. This allows for the examination of differences in baseline conditions by subgroup to better define how the effects can vary. The application of GBA+ to the baseline conditions should not be limited to simple descriptions of differences but include an explanation of the underlying causes of these inequalities. The proponent is encouraged to refer to the Agency's guidance document [Gender-Based Analysis Plus in Impact Assessment](#).

In describing the biophysical environment, the Impact Statement must take an ecosystem approach that considers how the project may affect the structure and functioning of biotic and abiotic components with the ecosystem using scientific, community and Indigenous knowledge regarding ecosystem health and integrity, as applicable. The Impact Statement must provide a description of the indicators and measures used to determine ecosystem health and integrity as reflected in the Guidelines. The presence of endangered ecosystems potentially affected by the project should be included the description of the biophysical baseline conditions.

The environmental baseline conditions must consider the resilience of relevant species populations, communities and associated habitats to the effects of the project. Ecological processes should be evaluated for potential susceptibility to adverse effects from the project. Considerations include: configuration and connectivity of habitat patches; continuation of key natural disturbance regimes; structural complexity; nutrient cycling; interactions of biotic components with each other and with abiotic components; population dynamics and genetic diversity; and Indigenous knowledge relevant to the conservation and sustainable use of relevant species populations, communities and associated habitats.

If the baseline data have been extrapolated or otherwise manipulated to depict environmental, health, social and/or economic conditions within the study area, modelling methods must be described and must include assumptions, calculations of margins of error and other relevant statistical information. Models that



are developed should be validated using field data from the appropriate local and regional study areas. If surrogate data from reference sites are used rather than specific measurements at the project site, the Impact Statement must show how the data are representative of the site conditions.

The Impact Statement must establish appropriate study area boundaries to describe the baseline conditions. Section 6.4 “Establishing spatial and temporal boundaries” provides additional details on the appropriate approach in selecting boundaries. The information requirements for baseline conditions are detailed in sections 7 to 11.

Requirements related to geospatial data

Where data is required in geographic information systems (GIS) format, they must be provided to the Agency as electronic geospatial data file(s) compliant with the Government of Canada’s [Standard on Geospatial Data](#) and metadata (ISO 19115). The proponent should include metadata with, at the minimum, the following information:

- a description of data including:
 - title;
 - summary of what is contained in the data file;
 - source of the data;
 - date of creation for the data;
- the point of contact and originator; and
- permissions, restrictions and limitations for sharing the data.

Providing publically accessible GIS files is intended to support the Government of Canada’s commitment to Open Science and Data and to facilitate the sharing of information with the public through the Registry, the Agency’s Internet Site and the Government’s Open Science and Data Platform. The Agency will make the geospatial data files available to the public under the terms of the [Open Government License – Canada](#). The Agency’s guidance on submitting geospatial data is available on the [proponent portal](#).

More specific requirements for maps and geospatial data are integrated in the relevant sections of the Guidelines.

Requirements related to reference documents

The impact assessment must be based on information that is publically accessible. Therefore, the proponent must provide a summary for the documents that served as key references in the Impact Statement that are not otherwise publically accessible, or consider appending them to the Impact Statement.

6.2. Sources of baseline information

Information sources and data collection methods used for describing the baseline environmental, health, social and economic setting may consist of:



- the federal government, including the departments and agencies with relevant expertise for the impact assessment;
- resources from the governments of Quebec (Ministère des Forêts, de la Faune et des Parcs (MFFP) and Ontario (Ministry of the Environment, Conservation and Parks [MECP]), for example;
 - [Centre de données sur le patrimoine naturel du Québec](#) (CDPNQ) (French only);
 - [Ontario \(Natural Heritage Information Centre\)](#); and
 - [Species at risk guides and resources](#) (includes many best management practices);
- [Bird Conservation Regions \(BCR\) strategies](#);
- Universities;
- field studies, including study area site-specific survey methods;
- database searches, including federal, provincial, territorial and local data banks, namely:
 - [Atlas of the Breeding Birds of Ontario](#) (2001-2005);
 - [Québec Breeding Bird Atlas](#) (2010-2014);
 - Other monitoring program databases:
 - [eBird](#);
 - [Breeding Bird Survey \(BBS\)](#);
 - [Christmas bird count](#);
 - [Birds Canada's Canadian Migration Monitoring Network](#);
 - [NatureCounts](#);
 - [iNaturalist](#);
 - [Suivi des populations d'oiseaux en péril \(SOS-POP\)](#) (French only);
 - [Atlas des amphibiens et reptiles du Québec \(ARRQ\)](#) (French only); and
 - [Neighbourhood Bat Watch](#);
 - [Health inequalities data tool](#) (Public Health Agency of Canada);
 - [Social determinants of health for the off-reserve First Nations population, 15 years of age and older](#) (Statistics Canada);
 - Information available under [Community and health system characteristics](#) (Canadian Institute for Health Information); and
 - [First Nations Regional Health Survey reports and associated online data](#) (First Nations Information Governance);
- protected areas, watershed or coastal management plans;
- natural resource management plans;
- species recovery and restoration plans;
- field measurements to gather data on ambient or background levels for air, water, soil and sediment quality, light levels or acoustic environment (soundscape);



- land cover data including terrestrial ecosystem mapping products, forest cover maps, remote sensing information. Habitats and important characteristics to be included:
 - waterbodies, wetlands and watercourses;
 - riparian habitat;
 - banks and other eroded habitats;
 - artificial water sources;
 - forests, tracts of trees, single trees (particularly old decaying trees and snags);
 - forest edges and tree line;
 - ridges, including eskers;
 - caves and mines;
 - cliffs, rock outcrops, exposed bedrock, talus and other karst topography;
 - buildings, bridges and other anthropogenic features, including linear features (e.g. roads, electrical transmission lines);
 - artificial light sources that attract insects;
 - critical habitat as described in recovery programs; and
 - any other habitat characteristics recognized as important in the area;
- specialized publications;
- environmental assessment documentation, including monitoring reports, from prior projects in the area and similar projects outside the area;
- regional studies, project assessments and strategic assessments;
- renewable harvest data;
- Indigenous knowledge, including oral histories;
- expert, community, public and Indigenous engagement and consultation activities, including workshops, meetings, open houses, and surveys;
- participant comments submitted during the Planning Phase (posted on the Registry) can be used to identify specific areas and existing conditions of concern to be considered in the Impact Statement;
- qualitative information gathered from interviews, focus groups or observation;
- census data;
- health impact assessments;
- human health risk assessments (HHRA);
- studies on community well-being and other socio-economic studies;
- community and regional economic profiles; and
- statistical surveys, as applicable.

The Impact Statement must provide detailed descriptions of specific data sources, data collection, sampling, survey and research protocols and methods followed for each baseline environmental, health,



social and economic condition that is described, in order to corroborate the validity and accuracy of the baseline information collected. The Impact Statement must include a bibliography of all documents and sources of information consulted.

The baseline data must be collected in a way that makes possible analyses, extrapolations and reliable predictions. The collated data should make it possible to carry out analyses to estimate pre-project baseline conditions, predict impacts, assess and compare post-project conditions, all at the scale of the project, and the local and regional assessment areas. Modelling methods, error estimates and hypotheses should be presented. The modelling and simulations should be used at the beginning of the Planning Phase to assess the sampling effort required and determine quantitatively the effectiveness of design options.

Ethical guidelines and relevant cultural protocols governing research, data collection and confidentiality must be adhered to. This is particularly important in the case of information gathered and studies conducted with vulnerable subgroups. Namely, the proponent must respect the obligation of protecting personal information and adopt the established standards for the management of Indigenous data (e.g. the [First Nations principles of Ownership, Control, Access and Possession](#) (OCAP), or standards adopted by an Indigenous people).

6.3. Selection of valued components

The Impact Statement must describe the VCs, processes and interactions that are deemed to be of concern or likely to be affected by the project. The Impact Statement must indicate to whom these concerns are important (e.g. the public, federal authorities or Indigenous peoples) and the reasons why, including environmental, cultural, historical, social, economic, recreational, aesthetic considerations, its importance for Indigenous peoples and based on Indigenous knowledge. The VC must be defined not only by its role in the ecosystem, but also by the value people place on it.

The Impact Statement must provide the rationale for selecting specific VCs and for excluding others. The priority in selecting VCs to be included and assessed should be project-specific and focused on appropriateness, not influenced by the quantity of information available or the use of the VCs in other assessments.

In selecting a VC to be included, the following factors should be considered:

- VC presence in the study area, or in the watersheds that the study area would pass through;
- the extent to which the effects of the project and related activities have the potential to interact with the VC;
- the extent to which the VC may be affected by other past, current or future projects in combination with other human activities and natural processes;
- the extent to which the VC is linked to Indigenous interests, governance or rights and whether an Indigenous people has requested the VC;
- the extent to which the VC is linked to federal, provincial, territorial or municipal government priorities;

- information from any ongoing or completed regional assessment processes;
- the possibility that an adverse effect on the VC would be of particular concern to Indigenous peoples, the public, or federal, provincial, territorial, municipal or Indigenous governments; and
- whether the potential effects of the project on the VC can be measured or monitored, or would be better ascertained through the analysis of a proxy VC.

The VCs must be described in sufficient detail to allow the reviewer to understand their importance and to assess the potential adverse and positive effects arising from the project activities on the environment, health, social and economic conditions.

During the Planning Phase of the project, Indigenous peoples raised components to be treated as individual VCs. These include: beaver, bear, small game, and moose (La Vérendrye Wildlife Reserve population), blueberries, current and future land and resource use, sites important for current use of lands and resources for traditional purposes (hunting, trapping, fishing, and gathering), landscapes of interest, and sacred and archaeological sites. The proponent must take these components into account when selecting VCs. Each species at risk should be considered separately as a VC. In addition, key habitats associated with species at risk should be considered during the selection of the VC, namely bogs and other wetlands, as well as eskers and other similar geographical characteristics.

6.4. Establishing spatial and temporal boundaries

The spatial and temporal boundaries determined and established for the impact assessment will vary depending on the VC and should be considered separately for each VC.

The Impact Statement must:

- describe the spatial boundaries, including local and regional study areas, for each VC included in assessing the potential adverse and positive environmental, health, social and economic effects of the project and provide a rationale for each boundary;
- define spatial boundaries by taking into account the appropriate scale and spatial extent of potential effects and impacts (direct and indirect) of the project; community knowledge and Indigenous traditional knowledge; current or traditional land and resource use by Indigenous peoples; rights of Indigenous peoples, including cultural and spiritual practices; and physical, ecological, technical, social, health, economic and cultural considerations; and
- take into account the size, nature and location of past, present and foreseeable projects and activities as factors included in the definition of spatial boundaries, particularly for the regional study areas.

It should be noted that in some cases, spatial boundaries may extend to areas outside of Canada. These transboundary spatial boundaries should be identified where transboundary effects are expected and these transboundary effects considered in the Impact Statement.

The Impact Statement must explain how the proponent considered the information received by Indigenous peoples in its definition of spatial and temporal boundaries, particularly for VCs related to effects on Indigenous peoples. The spatial and temporal boundaries specific to VCs that are recommended for the



Impact Statement in these Guidelines have been elaborated during the Planning Phase and reflect participant comments and contributions, including federal authorities, Indigenous peoples and the public.

The establishment of the spatial limits must be supported by maps to facilitate the reader's comprehension.

To establish baseline conditions, the study area boundaries need to encompass the spatial boundaries of the project including any associated project components or related activities, and the anticipated boundaries of the project effects. Since spatial boundaries can vary for each VC, the study area can also vary. Considerations in assigning appropriate study areas or boundaries would include, but not be limited to:

- areas potentially impacted by changes to water quality and quantity or changes in flow in the watershed and hydrologically connected waters;
- areas potentially impacted by airborne emissions or odors;
- areas determined by dispersion and deposition modelling;
- areas within the range of vision, light and sound;
- the locations and characteristics of the key and most sensitive receptors⁶;
- terrestrial and aquatic species habitat areas likely to be affected directly or indirectly, usage timing and species migratory patterns;
- emergency planning and emergency response zones;
- the geographic extent of local and regional services;
- any affected communities;
- all potentially affected Indigenous peoples;
- areas of known current use of Indigenous land, cultural, spiritual and resource use; and
- existing affected infrastructure.

Generally, it is recommended that the proponent establish three spatial boundaries of study areas to assess the impacts on each VC:

- the Project Area: defined as the project footprint, including all temporary and permanent areas associated with the project;
- the Local Study Area (LSA): defined for each VC; and
- the Regional Study Area (RSA): defined for each VC.

⁶ Key receptors include sensitive receptors and other current and reasonably foreseeable human receptors that may be affected by project activities. The most sensitive receptors may include, but not be limited to, residences, health and social services institutions (hospitals, long-term care facilities, seniors' residences, etc.), educational institutions (schools, daycare centres, early childhood centres, etc.), tourism establishments (tourism information offices, museums, ski areas, summer camps, outdoor recreation areas, camp sites, etc.) and recreational areas (recreational land, urban parks, parks and conservation areas, etc.).



The terminology chosen to refer to the project area, LSA and RSA can vary depending on the context of the project, for example during the project development phase (development area), the assessment methods (modelling area), the effects assessment phase (local or regional effects assessment areas), but it is common to have at least three areas that correspond to the project, the local and the regional scales. For the RSA, which is usually the area used for the assessment of cumulative effects, it will be important to correctly identify which project and past, present and reasonably foreseeable physical activities are included or excluded. The proponent must provide a rationale for each boundary.

The spatial boundaries for the project area, LSA and RSA for the biophysical VCs should be defined using an ecosystem-centered approach (i.e. the components of the natural areas such as eskers, wetlands, birds, species at risk, etc.). The boundaries of ecoregions or derivatives should not be used, since the project will take place within, near or beyond the boundaries of ecoregions.

The spatial boundaries for the biophysical VCs should allow the following objectives to be met:

- the diversity of land cover types should be representative of that of the defined spatial extent;
- the spatial profile of land cover types should be well distributed in the defined spatial extent (e.g. change the spatial boundaries if one or more land cover types are concentrated in a sub-area and are uncommon in other parts of the region); and
- a low to moderate rate of change of the predominance of one or more land cover types based on an increasing distance with respect to the project area (i.e. use the distribution of land cover types to limit the distances within which comparisons must be made).

The impact statement must take into account the following recommendations with respect to wolverine, bats, and caribou:

- wolverine: The LSA should be at least: project area + 10-km buffer zone; simulation modelling could indicate a larger buffer zone.
- bats: The LSA should be at least: project area + 1-km buffer zone; simulation modelling could indicate a larger buffer zone.
- caribou: The LSA should be at least: project area + 10 to 40-km buffer zone; simulation modelling could indicate a larger buffer zone. In addition to assessing the project and the cumulative effects at the level of the three project study areas (defined above), the project must also be assessed at the level of the federal range of the Val d'Or boreal caribou population (QC-1).

For wildlife for which the expertise is mainly provincial, it is recommended to contact provincial or local authorities to verify the appropriate spatial boundaries.

Defining temporal boundaries for baseline conditions should take into account the past conditions to establish a historical context and reveal temporal patterns or trends within adequate spatial boundaries. Information on past conditions may also help establish if present-day conditions are representative and how the project may affect them. The temporal boundaries for the effects assessment should be defined according to related timelines for all phases of the project in order to draw up a portrait of the effects according to key periods linked to the project. If potential effects are predicted after project decommissioning or abandonment, this should be taken into consideration in defining specific boundaries.



For biophysical VCs (i.e. natural components including eskers, wetlands, birds and species at risk, etc.), the temporal boundaries to establish the current baseline conditions must be defined to allow for the detection of all species that use the study areas during the year and from one year to another, and to estimate their temporal use pattern (e.g. reproduction or stopover for individuals migrating north or south). Relying on data from a temporal scale of over one year could enable variation due to irregular events to be considered (e.g. mast seeding, storms during migrations, late snowfalls, etc.).

For the evaluation of the project's contribution to sustainability, the proponent must consider long-term effects on the well-being of present and future generations.

See the document [Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012](#) for more information on establishing spatial and temporal boundaries.

7. Baseline conditions – Biophysical environment

The Impact Statement must provide a description of the information sources used to determine baseline conditions, including a justification of their adequacy. The justification should explain any limits pertaining to the source, such as for project-specific studies, field surveys, and the use of existing data and information.

The list of components of the biophysical environment that follows could be recognized as VCs and as such would require a detailed baseline description in the Impact Statement. In the event other environmental components are identified as important by Indigenous peoples and local communities during engagement and consultation activities with the proponent, they must be integrated into the list.

7.1. Atmospheric, acoustic and visual environment quality

The Impact Statement must:

- assess the ambient air quality in the project study areas and identify existing emissions and contaminant sources. The description and assessment of background concentrations and existing contaminants deposition of contaminants may be carried out in various ways (e.g. using long-term or short-term monitoring data, using the air quality of representative areas or using results obtained from air quality models);
- provide the results of a baseline survey of ambient air quality, in particular near key receptors, by identifying and quantifying emission sources for the following contaminants:
 - total suspended particulates,
 - fine particulates smaller than 2.5 microns (PM_{2.5}),
 - respirable particulates of less than 10 microns (PM₁₀),

- carbon monoxide (CO),
- ozone (O₃),
- sulphur oxides (SO_x),
- nitrogen oxides (NO_x),
- volatile organic compounds (VOCs), including acetaldehyde and formaldehyde,
- hydrogen sulphide (H₂S), and
- any other toxic air pollutants from mobile, stationary or fugitive sources, including contaminants produced by the combustion of diesel fuel, such as particulate matter, metals, and polycyclic aromatic hydrocarbons (PAHs);
- compare ambient air quality results must be compared with provincial and federal standards. For air pollutants with standards, the proponent must use the averaging period and the statistical format associated with each numerical value. Standards include: Canadian Ambient Air Quality Standards (CAAQS), National Ambient Air Quality Objectives (NAAQO)), the Quebec air quality standards , and Ontario Ambient Air Quality Criteria (AAQC)). The proponent must refer to the new CAAQS established by the Canadian Council of Ministers of the Environment (CCME) for PM_{2.5}, O₃, SO₂ and NO₂ to take effect in 2020 and 2025;
- address seasonal variability in the baseline survey and determine ambient contaminant concentrations using complete, exhaustive and representative monitoring data, collected over an appropriate duration (multi-year) and geographic scope. Data validation and quality control methods must also be described;
- describe current ambient noise levels at key receptor points, including the results of a baseline ambient noise survey and permissible noise levels for each receptor. The information on usual noise sources (natural or anthropogenic), their geographic extent and temporal variations must be included. At the time of collecting baseline data for the study on ambient noise where there are human receptors, it is recommended that the following aspects be considered:
 - natural sounds;
 - soundscapes (see standard [*ISO 12913-1:2014. Acoustics — Soundscape — Part 1: Definition and conceptual framework*](#));
 - expectations regarding quiet conditions in specific places or at specific times;
 - usual sleeping hours (the default assumption is 10 p.m. to 7 a.m.); and
 - degree of baseline annoyance attributable to existing noise sources (e.g. vehicle traffic, aircraft, other industrial noise);
- justify the selection of and provide information on all noise sensitive receptors in the study area, including any foreseeable potential receptor and the distance between the receptors and the project;
- describe existing ambient night-time light levels at the project site and at any other areas where project activities could have an effect on light levels;
- describe night-time illumination levels during different weather conditions and seasons; and

- describe landscapes of interest, visual screens and other components of the visual environment, and locate them on maps.

The proponent should refer to the Health Canada guides, [Evaluating Human Health Impacts in Environmental Assessment: Noise](#) and [Evaluating Human Health Impacts in Environmental Assessment: Air Quality](#) (see complete references in sections 27 “Part 2 – Reference documents”) regarding the evaluation of project effects on human health associated with the changes in ambient noise and air quality. It is recommended that the proponent complete the checklists provided in these guides (Appendix B in the guide on noise and Appendix A in the guide on air quality) to assist participants in verifying whether the key elements of an evaluation of noise or air quality impacts were provided and their location in the Impact Statement.

7.2. Meteorological environment

The Impact Statement must:

- describe the local and regional climate, in sufficient detail to highlight weather variations and characteristics of the regions affected by project activities and components;
- include historical records of relevant meteorological information, such as total precipitation (rain and snow);
- provide mean, maximum and minimum temperatures;
- provide typical wind speed and direction;
- identify the potential for extreme weather events such as, wind, precipitation and temperature extremes; and
- consider the influence of climate change in the description of the local and regional climate and in the risks of extreme weather events.

7.3. Geology, geochemistry and geological hazards

The Impact Statement must:

- describe the geology of the bedrock and unconsolidated sediments at an appropriate scale along the pipeline route, including a table of geological descriptions, geological maps and cross-sections at the appropriate scale, including geospatial data files.
 - If 1:50,000 geological maps of the bedrock and unconsolidated sediments are unavailable or inadequate, that information will have to be obtained through geotechnical surveys or drilling along the entire length of the pipeline route in advance, in order to help plan the required work, or at least during the course of the work;
- describe the geomorphology, topography and geotechnical characteristics of areas proposed for construction of major project components;

- provide a characterization of the geochemical composition of the materials expected to be excavated or blasted such as waste rock;
- identify and provide maps showing any areas with potential for acid-generating rock and provide geochemical characterization of potential for metal leaching and acid rock drainage, for major and trace elements, including oxidation of primary sulphides and secondary soluble sulphate minerals, as applicable;
- identify on geological maps the location of areas of bedrock outcrops that will require blasting;
- identify the geological zones likely to contain asbestos fibres;
- identify any geological hazards that exist in the areas planned for the project facilities and infrastructure, including:
 - history of seismic activity in the area, including induced earthquakes, and secondary effects such as the risk of seismic generated tsunamis, landslides and liquefaction;
 - a discussion pertaining to the potential presence of active faults; and
 - isostatic rise or subsidence; and
- describe the history of landslides, slope erosion and the potential for ground and rock instability/landslides, and subsidence during and following project activities.

7.4. Topography, soil and sediment

The Impact Statement must:

- describe the general topography of the project zone and all the specific physical characteristics the project will pass through or that might affect the project;
- identify potential wind or water erosion zones;
- describe the terrain, sediment and soil in the project's local and regional zones, including sediment stratigraphy, surficial geology maps and cross-sections of appropriate scale;
- identify any areas of ground instability;
- provide maps depicting soil depth by horizon and soil order within the pipeline site area to support soil salvage and reclamation efforts and to outline the potential for soil erosion;
- describe the suitability of topsoil for use in the reclamation of disturbed areas, taking into account the acid generating and metal leaching potential, if applicable.
- for agricultural lands or forested lands with agricultural capability, describe:
 - the soil classification, including the order, group, family, series and type of soil prior to construction, and quantify the soil classification;
 - the productivity of land and the type of agricultural resource;
 - the soil types in the study area that are highly susceptible to: wind and erosion, soil compaction and loss of structure and tilth;

- any other soil types needing specific management of mitigation measures, such as marine clays; and
- soil conservation and protection measures; and
- describe the historical land use and the potential for contamination of soils and sediments and describe any known or suspected soil contamination with the study area that could be re-suspended, released or otherwise disturbed as a result of the project.

7.5. Riparian and wetland environments

The Impact Statement must:

- provide characterization of the shoreline, banks, current and future flood risk areas, wetland catchment boundaries;
- quantify, delineate and describe wetlands (fens, marshes, peat lands, bogs, etc.) within the local study area potentially directly, indirectly or cumulatively affected by the project in the context of:
 - wetland class, ecological community type and conservation status;
 - biodiversity;
 - abundance at local, regional and provincial scales;
 - distribution; and
 - current level of disturbance;
- provide GIS files of mapped features depicting natural areas and wildlife presence within the study area;
- identify, map and categorize all wetlands potentially directly or indirectly affected by the project;
- determine whether these wetlands are within a geographic area of Canada where wetland loss or degradation has reached critical levels, or whether they are considered ecologically or socially or economically important to a region;
- identify and describe wetland capacities to perform hydrological and water quality functions, provide for wildlife and wildlife habitat or other ecological functions;
- provide a wetland functions assessment in accordance with the guiding principles of [Wetland Ecological Functions Assessment: An Overview of Approaches](#) or any subsequent approved guidelines by which to determine the most appropriate functions assessment methodology to use (see section 27 “Part 2 – Reference documents”);
 - the assessment should be conducted for all wetlands directly affected by the project and for all hydrologically related wetlands. As part of this assessment, the proponent must ensure that wetlands are taken into account in the context of:
 - major watersheds of which they are a part;
 - the use of adjoining land, with an emphasis on hydrology and other functions; and

- the terrain and/or watershed, taking into account topography, soil types and hydrologic connections;
- the assessment shall be quantitative and include the collection of baseline information on the functions of the wetlands specific to the site, including:
 - a description of all wildlife species using wetlands;
 - surveys aimed at determining the presence, abundance, density and distribution of migratory birds, species at risk under listed under the *Species at Risk Act* (SARA), the Ontario *Endangered Species Act* and the Quebec *Act Respecting Threatened or Vulnerable Species* and species assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as being endangered as these relate to potentially impacted wetlands and related riparian areas. Surveys must comply with established standards, be specific to one species or group of birds, and be conducted during appropriate times of year, as specified in sections 7.8, 7.9, and 7.10 of this document. Whenever possible, surveys of species at risk should focus on each species individually (generally speaking, an indicator-based approach is not suitable for species at risk). Surveys should not be limited to wetland-reliant species or groups of species; rather, they should include all species known to frequent wetland habitats as part of their life cycle. Data should be sufficiently reliable to make it possible to identify the wetland classes important to each species (and how many thereof);
 - spatial location and a description of the biological characteristics of each potentially impacted wetland, as well as the ecological functions (hydrologic properties, biochemical cycle, habitat, climate) each one performs. It is recommended to carry out as accurate an assessment as possible of the wetland's biological characteristics and the ecological functions it performs;
 - a justification and detailed description of the methodology used to conduct the wetland functions assessment; and
 - complete sets of data for all project sites, including GIS files and databases;
- identify a regional study area of sufficient size to capture effects to wetlands within the larger drainage area and include wetlands located outside of the local study area that may be affected by hydrological changes as a result of cumulative effects; and
- communicate with provincial or local authorities to determine potential application of other wetland conservation policies, regulations and guidelines (see the [Wetland Network](#) website).

7.6. Groundwater and surface water

The Impact Statement must:

- in addition to the information requested under section 7.2 "Meteorological environment", provide hydrometeorological information (temperature, precipitation, evapotranspiration) to represent the current climatic period (approximately 30 years), based on data from nearby weather stations or from a weather station on site if required (including but not limited to all stations within a 150 km radius from the pipeline routing);

- describe and illustrate on one or more topographic maps, at appropriate scales, the drainage areas throughout the pipeline right-of-way. On the map(s), also identify all water bodies and watercourses, including intermittent streams, flood plains and wetlands, watershed and sub-watershed boundaries, and indicate the intended locations of crossings of water bodies or watercourses for the pipeline and any other project component;
- for each water body and watercourse potentially affected by the project, provide the timing of freeze-thaw cycles, ice cover and ice conditions for the water bodies and watercourses;
- predict, for each water body and watercourse potentially affected by the project, the bathymetry, maximum and mean depths, and type of substrate (sediments);
- provide a delineation and characterization of groundwater–surface water interactions, including an identification of groundwater-dependent ecosystems, wetlands, and recharge and discharge areas;
- identify all springs and any other potable surface water resources within the local and regional project areas and describe their current use, potential for future use, and whether their consumption has Indigenous cultural importance;
- describe, for each water body and watercourse potentially affected by the project, the surface water quality baseline characterization program, including sampling site selection, monitoring duration and frequency, sampling protocol, and analytical protocol, including quality assurance and quality control measures;
- as part of the surface water quality baseline characterization program, provide data for physicochemical parameters (temperature, pH, electrical conductivity, dissolved oxygen, turbidity, radionuclides, major and minor ions, trace metals, nutrients, and organic compounds, including those of potential concern), and include additional data as required to illustrate the seasonal and inter-annual variability in baseline surface water quality, including possible changes due to groundwater–surface water interactions;
- identify all domestic, communal or municipal water wells within the local and regional project areas, including their depth, distance from the pipeline, stratigraphy, piezometric level and specific capacity; describe their current use, potential for future use, and whether their consumption has any Indigenous cultural importance;
- map the aquifers (granular and rocky) that are in use used and would be crossed by the pipeline within a 10 km buffer zone on each side of the pipeline route. Houses and wells in the buffer zone should also be mapped and linked to the domestic well database, by identifying them so that their characteristics can be determined from the database. Distances from the houses and wells from the pipeline must also be marked and add to the map and database;
- identify all groundwater monitoring wells in the project area and within 10 km of the project area, including their location and groundwater quality information;
- provide monitoring well hydrographs showing the full range of seasonal and inter-annual water level variations;
- describe the groundwater quality baseline characterization program including sampling site selection, monitoring duration and frequency, sampling protocol, and analytical protocol including quality assurance and quality control measures;

- provide baseline groundwater quality data for physicochemical parameters gathered from existing wells and available publications (temperature, pH, electrical conductivity, dissolved oxygen, turbidity) and relevant chemical constituents (major and minor ions, trace metals, radionuclides, nutrients, and organic compounds, including those of potential concern);
- provide data gathered from existing wells (and subsequently from piezometers installed as part of this project) concerning the seasonal and inter-annual variability in groundwater levels and in baseline groundwater quality, including possible changes due to groundwater–surface water interactions resulting from the work;
- in populated areas and where aquifers (granular or rocky) are used for water supply (e.g. Harricana moraine, Saint-Mathieu esker) and near wetlands and watercourses, piezometers must be installed at least every 5 km along the pipeline right-of-way to measure initial water quality and to take water samples during follow-up (three times per year) and when there is a suspected or known leak. The physicochemical parameters should include methane testing. Data collected through drilling and surveying should be added to the database (stratigraphy, depth, groundwater level, etc.);
- describe the hydrostratigraphic units (aquifers and aquitards) of the hydrogeological environment, in unconsolidated sediments and in the bedrock based on geological cross-sections, and provide a piezometric map showing the direction of groundwater flow;
- describe the structural geology of the hydrogeological environment, including major faults;
- describe the groundwater flow boundaries (hydrogeological watershed) of the hydrogeological environment for the purposes of the Impact Statement;
- provide maps showing probable recharge and resurgence zones in populated areas and areas of high, medium and low vulnerability (related to surface contamination); and
- provide a 2D conceptual model (cross-section) along the proposed pipeline route in populated areas where aquifers (granular or bedrock) are used for supply including the hydrogeological properties of the hydrostratigraphic units, including hydraulic conductivity or transmissivity, storage coefficient, porosity, water table level, and directions.

The proponent should refer to the Health Canada guide [Guidance for Evaluating Human Health Impacts in Environmental Assessment: Water Quality](#) to ensure that all necessary information and analyses are provided to assess the project's impacts on human health in relation to changes in water quality. The proponent should complete the checklist in this guide (Appendix A) to assist participants in verifying that the main components of a water quality impact assessment have been completed and to identify the location of this information in the Impact Statement. The checklist will make it easier to review the Impact Statement, and it will be particularly helpful if analyses on this aspect are found in multiple sections of the Impact Statement.

7.7. Fish and fish habitat

The Impact Statement must:

- prepare a list of all water bodies and watercourses (permanent and intermittent) that will require a crossing. It is recommended that the information first be grouped by segment based on the

administrative regions affected by the project, namely Ontario, Abitibi-Témiscamingue, Mauricie and Saguenay–Lac-Saint-Jean. Subsequently, for each segment, it is recommended that water bodies and watercourses be grouped by sub-watershed using the following criteria:

- the type of watercourse (e.g. lotic or lentic system, lake, river, pond, temporary or permanent stream);
- the size of the water bodies and watercourses, the width at the ordinary high water mark (OHWM) based on the following classes: large stream (over 20 m in width), medium stream (between 5 and 20 m in width), small permanent and intermittent streams less than 5 m in width);
- the sensitivity of fish habitat at the crossing site; and
- the anticipated or selected method of crossing (trenched or trenchless);
- provide a description of the aquatic environment affected at the crossing sites. It is recommended that the information be presented in the form of tables and that the description be accompanied by photos.
 - For watercourses, it is recommended that characterization be performed on the basis of homogeneous section. The parameters to be measured include, but are not limited to, length of the section, width at the OHWM, depth, streamflow types and characteristics (velocity, turbidity, peak and low flows, etc.), substrate type (shoreline and bottom), aquatic (grass flat) and riparian vegetation, natural barriers (significant vertical drop, waterfalls, subsurface flow over large distances, beaver dams, etc.), and other barriers (stream crossing structures, etc.) that impede or obstruct free passage of fish. The obstacles must be documented (size, condition, etc.) and their passability by fish must be assessed.
 - For waterbodies, the parameters to be measured include, but are not limited to, bathymetry, maximum and average depths, seasonal water level fluctuations, substrate type (sediment), aquatic (submerged, floating and emergent) and riparian vegetation, and water quality (temperature and dissolved oxygen profile, turbidity, transparency, pH);
- provide a description of fish populations, including species and life cycle stages, based on field surveys (standardized experimental fisheries) and available data (e.g. government and historical database, fisheries data, information from consultation and engagement activities, traditional knowledge of Indigenous peoples affected by the project, etc.). The data sources must be identified, and detailed information relating to fisheries must be provided (description of gear and catch methods, location of sampling stations, date of surveys, species surveyed, size and life cycle stage, catch per unit effort, etc.). It is recommended that the information be presented in the form of tables;
- provide the location and area of potential and confirmed habitat in or near the work area and describe how they are used fish in terms of habitat function (spawning, nursery, growth, foraging, migration, cover habitat, thermal and winter refuge, etc.) and habitat suitability for species present. It is recommended that the information be presented on one or more maps at appropriate scales, and in the form of tables;
- prepare a list of aquatic species at risk (provincial and federal) that are known or likely to be present and provide the location and a description of suitable or potential habitat for these species (residence and critical habitat) at or near work areas;

- identify and characterize water bodies and watercourses that may be indirectly affected by project components (e.g. right-of-way, temporary camps, work sites and storage areas, etc.); and
- describe the use of fish and aquatic species as country foods, and whether their consumption and use has Indigenous cultural importance, including medicinal uses. Also, all sites used in the study area or historically important sites for the collection of country foods must be identified and mapped, such as important fishing sites.

It is worthwhile noting that certain intermittent streams or wetlands (marshes, bogs, ponds, etc.) may constitute fish habitat or contribute indirectly to fish habitat. The absence of fish or water at the time of the survey does not irrefutably indicate an absence of fish and/or fish habitat (e.g. migratory corridor). Similarly, beaver dams and accumulations of woody debris are not considered impassable barriers to fish.

7.8. Birds, migratory birds and their habitat

The Impact Statement must:

- consider the following bird groups as unique VCs: waterfowl, aquatic birds (other than waterfowl), songbirds, birds of prey, shorebirds, wetland birds (i.e. bogs, fens and other wetland habitats), and bird species at risk. Each species at risk must be considered separately as a VC (see section 30 “Part 2 – Appendix 3: Preliminary list of species at risk that may use the project study area and local study area”);
- describe biodiversity of bird species and their habitats that are found or are likely to be found in the study area, including the presence of BCRs. Relevant information sources are provided in section 6.2 “Sources of baseline information”. Take into account the following technical recommendations:
 - gather data on birds so as to represent the temporal sources of variation between years, during and between seasons (e.g. spring migration, breeding, fall migration, overwintering), and in the 24-hour daily cycle;
 - gather the explanatory data (i.e. covariables) required for modelling so as to represent the following spatial sources of variation: land cover composition, soil type, geomorphology, hydrological processes, and inter-annual and intra-annual climate variability;
 - collect data so as to permit sufficiently reliable extrapolations in space (i.e. at a minimum in the project area, local and regional study areas) and in time (i.e. over the years);
 - design surveys so they represent spatial and temporal targets of modelling and extrapolations, and so they produce scientifically defensible forecasts of impacts and estimates of the effectiveness of mitigation measures. The surveys should be sufficiently sensitive to detect and quantify impacts at the above-mentioned spatial and temporal scales, any variations from the forecasts and the effectiveness of the mitigation measures. Provide a rationale for the choice modelling techniques using current and recent scientific literature;
 - plan survey protocols using modelling and simulations to estimate sampling needs, as well as analysis to evaluate the design options that result. It is recommended to:

- collect field data for a minimum of two years to account for natural variability in populations. A minimum of two years is normally required unless existing data are available for the study area, in which case these data can be used to complement the data collected in the field (minimum 1 year). The available data must be sufficiently robust to assess the variability of populations between years and a demonstration to this effect must be presented;
 - plan the sample size to ensure an assessment of the project area in the context of the LSA and the RSA. Proper survey planning will have to involve a number of survey locations in order to represent the heterogeneity of the RSA habitat and obtain a sufficient number of inventory locations by land cover or habitat category without the need to group habitat classes post-project;
 - plan for the sampling effort per unit area such that field surveys are more intensive in the project area. The level of effort per unit area may be similar to or slightly lower in the rest of the LSA, but it should be proportional to the probability that the effects of the project will affect birds in this area. The steps taken outside the project area must be carefully designed so the comparative estimates between the project area, LSA and RSA are impartial and as accurate as possible;
 - take into account that rare species require much greater detection efforts than common species, an aspect that must be taken into consideration during the survey development by increasing their number and duration;
 - use simulation modelling to assess bias and accuracy between the project area, LSA and RSA in order to verify whether these estimates are useful for comparison purposes. Field surveys should be conducted in the RSA when there are few data that effectively describe the regional bird populations living in areas far from road networks; and
 - develop the songbird survey plan based on a standardized approach across both the project area and the LSA. An example of a standardized approach and methodology recommendations for designing a songbird survey plan are provided in section 29 “Part 2 – Appendix 2: Environment and Climate Change Canada’s suggested approaches to standardized design and development of a songbird survey plan”;
- at minimum, the combined information from existing data and field surveys must be detailed to describe the distribution and abundance of all bird species in relation to the study areas;
- for avian species at risk, locate on an appropriately scaled map the potential habitats, survey locations, records of the species, residences and critical habitat.
 - Include sites that are likely to be sensitive locations and habitat for birds or environmentally significant areas. These include, without being limited to, National Parks, Areas of Natural or Scientific Interest, Migratory Bird Sanctuaries or other priority areas or sanctuaries for birds, National Wildlife Areas or World Biosphere Reserves, offshore Marine Protected Areas, and ecologically and biologically significant marine areas.
 - Illustrate on the map the project’s footprint, identifying temporary and permanent infrastructure. Locate the highest concentrations or areas of use by species;

- submit complete datasets for all the targeted sites. These datasets should be presented in the form of complete, quality-assured relational databases containing precisely georeferenced information on the site, accurate data on observations and visits, and unabridged observations and measurements;
- attach documents and digital files for all analysis results to provide a clear understanding of methods and ensure that results can be replicated. Preference is given to data processing procedures rather than descriptive documentation;
- provide raw survey data and analysis results for 1) all birds, 2) each VC and 3) BCR priority species based on the following criteria: frequency of occurrence, abundance, abundance in each type of habitat. and a map showing the areas with the highest concentrations of the species;
- provide a detailed description of bird habitat that includes as a minimum the characterization of the biophysical conditions of the ecoregions and BCRs, taking into account the specific conditions found near the borders of these regions. The project crosses ecoregions and BCRs and is located near their borders. Since the project areas are found, in particular, at the edge of ecoregions and BCRs or cross the borders, the habitat profiles should reflect these border characteristics.
 - If there is displacement of breeding birds, the reference data should provide evidence that there is a significant number of equivalent habitats in which the birds can move and that the vegetation removed is not unique to the project area;
- identify the biodiversity measures, i.e. biotic and abiotic indicators that are used to characterize the baseline avifauna biodiversity conditions and discuss the rationale for their selection.
 - Species communities should not be grouped together by diversity indicator and should not be limited to the indicator species. The identification of species, distribution, abundance and, when possible, estimates of species' breeding status should be the main quantification objectives.
 - Biodiversity metrics for each VC should include the following: distribution in space, frequency of occurrence, occurrence and abundance trends in time, abundance and density, as well as the types of associated habitats and the strength of the associations;
- provide abundance and distribution estimates, and information on the life history of birds (including waterfowl, raptors, shorebirds, marine birds, marsh birds and other land birds) in the study area. Estimates may be based on existing information or additional surveys, as appropriate, to provide current data sufficient for reliable estimates. The following recommendations should be applied:
 - generate abundance and distribution measurements using spatially distributed and randomly chosen sampling sites. When major habitat edges are identified, sampling should be designed such that it is possible to sufficiently describe the importance not only of the types of habitat, but also of the edges between the types of habitat.
 - Ensure that the coverage is large enough to estimate and take into account detection errors and provide unbiased estimates of abundance and distributions using, as best practice, simulation modelling before sampling.
 - Sampling within temporal boundaries should be spatially and temporally balanced so that all spatial areas receive comparable temporal coverage;
 - provide estimates of confidence or error values for all abundance and distribution estimates. The estimates should be defined (e.g. mean over several years, mean over several sites, modelled

predictions) and confidence intervals or other intervals should be defined (e.g. 95% confidence intervals, credible intervals). The use of hypothesis tests with p values is not generally appropriate in this context and a rationale should be provided for their use;

- each time that species' densities are estimated, take into account the detection error induced by observers to ensure the validity of comparisons between the counts (e.g. between surveys, before and after surveys, or between impacted and non-impacted sites). When detection errors are counted, the method used should take into account random variation between visits, as well as the detection variability dependent on the types of land cover, observers, meteorological conditions, period of year and species. Simulation methods can help to determine whether a specific method is appropriate for a survey model and a specific analysis. Care must be taken to avoid affecting the reliability of abundance estimates;
- preferably use stratified random sampling in space. Sites should be chosen according to a random sampling procedure that takes the project's footprint into account. To select specific sampling sites, the sites in the area of interest must be well distributed and there must be coverage of the different types of habitat. The location should be chosen randomly using an approach to avoid implicit bias in the selection of a site;
- provide a rationale for the approach chosen. If necessary to guide or adjust the selection of the site based on access limitations, simulation modelling should provide evidence that this sampling strategy has not led to the introduction of bias;
- survey the relevant characteristics of the vegetation in a way that is not disproportionate with respect to the other types of vegetation. Bias in abundance estimates would compromise extrapolation and statistical deduction possibilities; and
- record all the criteria used to choose the location of parcels;
- identify areas of concentration of migratory birds, including sites used for migration, staging, breeding, feeding and resting.
 - Concentrations of migrating birds may vary over the course of a year and from one year to the next. It is therefore important to conduct surveys in the project area, LSA and RSA over space and time.
 - Counts of migrating birds are influenced by the presence of species and the length of their stay. Any attempt to estimate their abundance during a migratory period must include an estimate of the length of their stay and annual and intra-annual trends. With respect to abundance, irruptive species (e.g. Evening Grosbeak) may act in the same manner as migrating birds. They can withdraw from an area until the conditions change;
- provide a characterization of habitat features according to ecoregions and BCRs found in the project area that are associated with the presence of those bird species (e.g. land cover types, fragmentation, vegetation, marine elements), taking into account specific conditions present at the boundary of these regions.
 - The classification should include local aerial photographs and photographs taken at the site.
 - In the event that the assessment shows a displacement of nesting birds as part of project effects, the proponent will be expected to use the baseline conditions to provide evidence that there is

sufficient equivalent habitat where the birds can go and that the habitat is not unique to the project area;

- provide an estimate of estimated year-round bird use of the area (e.g. winter, spring migration, breeding season, fall migration).
 - For each period of the year, the survey effort must take into account differences in the species' movements, including winter use of species highly dependent on the habitat and highly mobile species, that accurately characterize the use of a site; and
- describe the use of birds for cultural or medicinal purposes and as a source of country foods, and whether these uses have Indigenous cultural importance.

Since data directly relevant to the study areas may be limited, other than data sourced from existing seasonal counting programs (e.g. BBS, eBird, Canard noir), existing sources may be used solely to estimate bird species likely to be found in the study area and to indicate potential migration dates (for migratory birds) or general breeding dates (for species breeding in the study area). When existing sources are used, supporting evidence is required to demonstrate that they are relevant to the project's spatial and temporal scales, and that they are representative of the avifauna and habitats of the study area.

Avian surveys should be designed in light of a thorough review of the available scientific literature pertinent to the specific region, bird groups and anticipated impacts. The "[Framework for the Scientific Assessment of Potential Project Impacts on Birds](#)" provides examples of project types and recommended techniques for assessing effects on migratory birds.

7.9. Vegetation and other wildlife and its habitat

The Impact Statement must:

- within the LSA of the project, provide a description of the biodiversity of wildlife species (animal and other organisms) and vegetation;
- identify the biodiversity metrics, biotic and abiotic indicators that are used to characterize the baseline biodiversity (e.g. population size, recruitment rates, etc.) and discuss the rationale for their selection;
- identify wildlife species and communities of ecological, economic or human importance (e.g. traditional use, tame pasture, native prairie, wetlands or old growth), and describe their:
 - biodiversity, population status, and distribution;
 - life cycle, seasonal ranges, migration and movements;
 - habitat requirements; and
 - sensitive periods (e.g. seasonal, diurnal and nocturnal);
- as indicators of biodiversity, take into account the species identified as being of importance or sensitive from an ecological, economic or human point of view, which may include, among others, insects and arthropods, e.g. the reference conditions of certain insect larvae in aquatic environments can serve as relevant indicators for the subsequent development of a biodiversity monitoring program;
- for vegetation surveys:



- provide GIS data files of mapped features depicting vegetation presence within the study;
- provide data files of mapped features depicting vegetation presence within the study area; and
- identify and describe any invasive species, introduced species of concern; and other species that may be considered as “weed species” of the project’s context;
- for animal species surveys:
 - collect wildlife data to represent the sources of time variation between years, during and between seasons (e.g. spring migration, breeding, fall migration, wintering), and in the daily 24-hour cycle;
 - submit complete data sets from any survey sites. These data sets should be presented as comprehensive, quality-assured, relational databases containing accurately geo-referenced information on the site, precise data on observations and visits, as well as unabridged observations and measurements; and
 - for all analysis results, attach documents and digital files that allow a clear understanding of the methods and reproduction of the results (preference is given to data processing procedures rather than descriptive documentation);
- describe and quantify the habitat type for animal species, including its functions, location, suitability, structure, diversity, relative use, natural inter-annual and seasonal variability, and abundance as it exists before project construction;
- describe the use of all wildlife species and plants as a source of country foods and whether its consumption and use has Indigenous cultural importance, including for medical purposes;
- describe the use and harvesting of fur-bearing species and whether its harvesting has Indigenous cultural importance;
- describe any locations within the study area that might constitute sensitive areas, and depict these on a map, such as:
 - species at risk critical habitat that has been designated or is under consideration;
 - ecological reserves and protected areas in proximity to the project location, or that could be affected by routine project operations;
 - any lands in the study area that might constitute sensitive areas and habitat for wildlife;
 - nearby environmentally significant areas, such as National Parks, areas of natural or scientific interest, National Wildlife Areas, World Biosphere Reserves or UNESCO World Heritage Sites; and
 - areas under consideration or study for such designation.
- list, and depict on a map, wildlife management areas and established or proposed sanctuaries;
- describe the levels of disturbance currently affecting wildlife and its habitat, such as habitat fragmentation and the extent of human access and use; and
- describe the natural disturbance regimes and their sources (e.g. fire, floods, droughts, diseases, insects and other pests, etc.).

7.10. Species at risk and their habitat

The Impact Statement must:

- provide a list of all species at risk that are likely to be in the project area and the LSA and may be directly or indirectly affected by the project, including:
 - species listed in Schedule 1 of the federal SARA. A preliminary list of species at risk likely to use the Project Area is provided in section 30 “Part 2 – Appendix 3: Preliminary list of species at risk that may use the project study area and local study area”. Each of these species must be considered separately as a VC;
 - species protected under provincial legislation, and species assessed by COSEWIC as extirpated, endangered, threatened or of special concern. It is recommended to refer to the most recent COSEWIC annual report for the list of assessed wildlife species posted on its website;
- include traditional knowledge and describe Indigenous importance, notably pertaining to the practice of rights;
- take into account that the detection of species at risk will require more survey effort, since they are generally less abundant, which needs to be considered in the survey design by increasing the number and duration of surveys. For the surveys:
 - collect wildlife data in order to represent sources of time variation between years, during and between seasons (e.g. spring migration, breeding, fall migration, wintering), and in the daily 24-hour cycle;
 - collect field data to account for natural variability in populations. To achieve this, a minimum of two years of inventory is normally required. However, if existing data are available for the study area, it can be used to complement the data collected in the field (minimum one year). The available data must be sufficiently robust to assess the variability of populations between years and a demonstration must be presented for that purpose;
 - plan the sample size to ensure sufficient assessment of the project area in the context of the LSA and RSA. Survey design will need to consider a large number of sites to represent the heterogeneity of RSA habitat and to plan the number of sites by land cover or by habitat class so that aggregation of post hoc habitat classes is not necessary. In terms of sampling effort per unit area, focus primarily on field surveys within the project area. The level of effort per unit area may be similar or slightly lower in the remainder of the LSA, but should be proportional to the likelihood that project effects will affect species at risk in that area. Actions undertaken outside the project area must be carefully designed to ensure that comparative estimates between the project area, LSA and RSA are unbiased and sufficiently accurate;
 - preferably use stratified random sampling of habitat. Sample sites must be selected using a random procedure such as a GIS grid overlay;
 - plan to include several sampling stations and several visits to each station to support all required assessment analyses. Inventories and analyses should be conducted by qualified experts; and
 - consult recovery plans for which a survey schedule would have been created to identify information gaps for these species, including for the designation of critical habitat.



For the species named in section 30 “Part 2 – Appendix 3: Preliminary list of species at risk that may use the project study area and local study area”, the Impact Statement must:

- provide any published studies that describe the regional significance, abundance and distribution of species at risk, including recovery strategies or plans;
- refer to the Species at Risk Public Registry or the most recent COSEWIC annual report for the list of assessed wildlife species posted on their website;
- provide data and summary lists for each species at risk based on the following:
 - abundance;
 - distribution across the survey sites (i.e. percentage of survey stations where they are recorded);
 - abundance in each habitat type; and
 - a map showing the highest concentrations or areas of use by species;
- supplement data with surveys, if necessary. Survey protocols should optimize detectability, and survey efforts should provide for comprehensive coverage at the appropriate time of year (e.g. survey breeding habitat during the breeding season, stopover habitat during migration);
- provide a rationale for the scope and methodology used for the surveys, including design, sampling protocols and data handling;
- when using recognized standards, provide details of any modifications to the recommended methods and the rationale for those modifications. Indicate who was consulted in the development of the baseline surveys (e.g. federal and provincial wildlife experts, specialists and local Indigenous peoples); and
- provide information or mapping at an appropriate scale (the appropriate scale is the project area and the LSA, as defined above for each valued component) for residences, seasonal movements, movement corridors, habitat requirements, key habitat areas, identified or proposed Critical Habitat and/or recovery habitat (where applicable).

The combined information from existing data and field surveys must at least be able to describe the distribution and abundance of species at risk in relation to the study areas. The Impact Statement must:

- locate, species by species, on a map at an appropriate scale, potential habitats, survey sites, species sighting records, residences and critical habitat. Illustrate, on the map, the project footprint by identifying temporary and permanent infrastructures. Locate the highest concentrations or areas of use by the species;
- submit complete data sets of all target sites. These data sets should be presented as comprehensive, high-quality relational databases, containing accurately georeferenced information on the site, precise data on observations and visits, as well as observations and measurements in non-summary form; and
- attach to the analysis results, documentation and digital files that allow for a clear understanding of the methodology, the analyses and a replication of results (preference is given to data processing procedures rather than descriptive documentation).

The proponent should consult the [Species at Risk Public Registry](#) to obtain information on the list of species at risk and their protection status, as well as available recovery. The Impact Statement must



specify the references to consulted documents and dates consulted. The proponent is responsible for ensuring that the most up-to-date documents have been used and that the status of the species is up to date.

The proponent should contact provincial or local government authorities to determine additional data sources and survey methods.

Bat-specific requirements

The Impact Statement must document baseline conditions in the project area and LSA. The proponent should consult provincial government experts on appropriate survey methods for bats, and provide a rationale for the methodology used, and include the following elements:

- conduct site-specific surveys to provide an overview of the species (present/undetected);
- quantify bat baseline activity (e.g. using acoustic detection to calculate a bat activity index) to assess the relative use of different habitats or features in the project area in order to evaluate and justify decisions regarding project location and anticipated impacts. In addition, locate and confirm the use of high-value features such as nurseries and resting sites (such as hollow trees and buildings), feeding areas and hibernacula;
- identify potential regional migration corridors and identify site-specific travel corridors and movement patterns;
- include the following types of surveys:
 - acoustic surveys, ensure study design is statistically valid; and
 - continuous acoustic monitoring throughout the night (at least from sunset to sunrise: 30 minutes before sunset to 30 minutes after sunrise is recommended), active season (spring dispersal/migration, summer breeding/fall migration and swarming [fall staging]), as well as appropriate surveys of hibernation sites; and
- locate and assess potential hibernation sites for bat use, taking into account the inter-annual and seasonal variability of use.

Data or reports must:

- include information on the acoustic detection methods used, including:
 - detector make and model;
 - microphone model used;
 - location of detectors;
 - height of microphones;
 - orientation of microphones;
 - special housing that may affect microphone sensitivity (e.g. wind screen, cones, weatherproofing);
 - mounting method (e.g. meteorological tower, pole);
 - device-specific settings (e.g. gain/sensitivity, etc.);
 - recording mode (i.e. full spectrum or zero crossing); and

- a summary of any equipment failure issues and a description of procedures used to ensure equipment was functional during deployment (including ensuring microphone sensitivity remains within an acceptable range);
- clearly describe how bat “passage” is defined, consistent with the definition used for any control group, and justify the choice of modality;
- clearly describe the methods used for acoustic identification, including validation procedures, species classification criteria and software used, if applicable (including versions and parameters); and
- take into account that when results are compared from year to year, the survey schedule, the equipment and the installation protocols must remain consistent from year to year.

Caribou-specific requirements (the Val-d’Or herd)

The Impact Statement must provide and be based on the best information available from the Government of Quebec regarding population size and trends. The proponent should consult Quebec provincial experts on appropriate survey methods for caribou and provide justification for the methodology used.

When developing boreal caribou surveys, the following source of information should be consulted: [An Aerial Survey Technique for the Forest-Dwelling Ecotype of Woodland Caribou, *Rangifer talandus caribou*](#).

The Impact Statement must:

- describe the use of the study areas by boreal caribou (e.g. distribution, movement) over time using survey data to supplement existing data if it is not sufficient.;
- take into account sensitive periods are associated with caribou life stages such as calving, overwintering and movements. and specific sensitive time periods established by Quebec for caribou which are used to identify, delineate and take into account habitat features;
- describe the type and spatial extent of biophysical attributes present in the study areas and defined in Appendix H of the [Modified Recovery Strategy for Woodland Caribou \(*Rangifer tarandus caribou*\), Boreal Population, in Canada 2019](#);
- conduct surveys to supplement existing data if data in the project study areas is insufficient or unavailable in order to understand where the biophysical attributes are located. Note that the identification of biophysical attributes is not dependent on the presence of boreal caribou in the area;
- provide the best available information from the MFFP on the level of disturbance (anthropogenic or fire-induced) in the range.

Turtle-specific requirements

The Impact Statement must provide and be based on the best information available from the provincial governments regarding population size and trends. The proponent should consult provincial governments experts on appropriate survey methods for turtles and provide justification for the methodology used.

When developing turtle surveys, the following sources of information should be consulted:

- [Protocole d’inventaire de tortues des bois au Québec](#)(French only)

- [Survey Protocol for Blanding's Turtle \(*Emydoidea blandingii*\) in Ontario](#)

A permit under the SARA should be obtained in advance for surveys on federal land if there is a chance that species at risk other than migratory birds will be harmed, harassed, captured or killed.

8. Baseline conditions – Human health

Baseline information is required on existing human health conditions to prepare the community health profiles. This information must include the current state of physical, mental and social well-being and incorporate a determinants of health approach to move beyond biophysical health considerations. In line with the World Health Organization's (WHO)⁷ expanded definition of health in the context of the social determinants of health, a determinants of health approach recognizes that health is more than the absence of disease but rather a state of general well-being, which is influenced by a variety of factors (i.e. determinants). The structural and inequality factors of the socio-economic context would influence the conditions in which people are born, develop, live, work and age. Acting as intermediary factors, these same conditions would in turn influence individual factors (called behavioural and biological factors), which directly affect physical and mental health. This approach recognizes the interdependence of valued environmental, health, social and economic components. Guidance on baseline information on social and economic factors, including those that may affect general well-being, is detailed in the sections 9 “Baseline conditions – Social context” and 10 “Baseline conditions – Economic context” respectively, and at section 11 “Baseline conditions – Indigenous peoples” for factors related to Indigenous peoples. The selection of determinants can be guided by the following references:

- the [Social determinants of health and health inequalities](#) recognized by the Public Health Agency of Canada;
- resources from the [National Collaborating Centre for Determinants of Health](#), such as the fact sheet [What are the social determinants of health?](#);
- resources from the [National Collaborating Centre for Healthy Public Policy](#);
- resources from the [National Collaborating Centre for Indigenous Health](#), such as the report [Health inequalities and the social determinants of Aboriginal peoples' health](#);
- resources from the National Collaborating Centre for Environmental Health on [Health Impact Assessments](#); and
- the [Positive Mental Health Surveillance Indicator Framework](#).

The scope and content of the human health baseline must reflect the specific project context, take into account input from the public and Indigenous peoples, and include indicators that are meaningful for the effects analysis. The information provided must:

⁷ PHAC, 2018. [Key Health Inequalities in Canada, Introduction Chapter](#).

- be sufficiently detailed to describe the pathways by which the project's influence on the determinants of health may affect health outcomes. This will help understand how these determinants have been taken into account and why certain indicators or information are presented when analyzing expected effects;
- provide a comparison of data at the provincial, regional or national level, if possible, to better interpret baseline health and social conditions;
- describe how community and Indigenous knowledge from relevant populations was used in establishing baseline health conditions, including input from diverse subgroups;
- describe baseline health conditions and establish a specific health profile for each Indigenous community, while applying GBA+; and
- describe baseline health conditions and existing health inequalities using disaggregated data for diverse subgroups (e.g. women, youth, and elders) and their different access to resources, opportunities and services within the community to support GBA+.

In preparing the report on baseline health conditions, the proponent must identify the social area of influence of the project. Information on those likely to be directly or indirectly affected by the project should be provided taking into account community members who are considered particularly vulnerable to changes brought about by the project.

Additional efforts may be required to engage with vulnerable subgroups in a meaningful way. In all cases, it is necessary to follow ethical guidelines and relevant cultural protocols governing research, data collection and confidentiality. This is particularly important in the case of information gathered and studies conducted with vulnerable subgroups.

To understand the context and to develop the baseline communities' health profiles, including Indigenous communities, the proponent must:

- describe any context-specific definitions of physical, mental and social health and well-being that are specific to the context of communities, including community and spiritual well-being, including from the perspective of the relevant Indigenous cultures and local communities;
- describe relevant community and Indigenous history or context, including historical impacts on health;
- describe the determinants of health selected specifically for Indigenous communities, including for subgroups within them (e.g. Indigenous women);
- document and describe the relevant protection factors that contribute to community well-being and resilience (e.g. sense of belonging, cultural continuity, language, family supports);
- develop community health profiles that reflect the overall health of each community, including birth rates, death rates, sexually transmitted infections, injuries, chronic disease rates and mental health status and other community-relevant health information. Profiles must:
 - include information on health VCs corresponding to health behaviours and human biology;
 - use, where known, secondary information sources (e.g. Public Health Agency of Canada, Statistics Canada, provincial health authorities);
- provide the approximate location and distance of likely human receptors, including foreseeable future receptors, which could be affected by changes in air, water, country food quality, and noise and light

levels. Include communities' gathering, hunting, trapping and fishing areas, including for Indigenous peoples.

- at minimum, provide a map showing the approximate locations of permanent residences, temporary residences (e.g. Indigenous cottages and camps identified in collaboration with Indigenous peoples) and sensitive receptors (e.g. schools, hospitals, community centres, retirement complexes, health care centres) near the project;
- describe drinking water sources, both surface or groundwater (permanent, seasonal, periodic or temporary), including approximate catchment areas at wellheads and their distance from project activities;
- describe the consumption of traditional foods as a health-related behaviour, including what species are used, quantities, frequency, harvesting locations and how the data were collected (e.g. site-specific consumption surveys, see the *First Nations Food, Nutrition and Environment Study*⁸).
 - Traditional foods refer to all foods that do not come from commercial systems. It includes all foods that are trapped, fished, hunted, harvested or grown for medicinal or subsistence purposes outside the commercial food chain. This definition includes the following foods:
 - aquatic and terrestrial wildlife that is fished, trapped, hunted or harvested (e.g. game or game birds, fish and seafood) and for domestic consumption;
 - fruits and vegetables harvested from the wild (e.g. berries, seeds, leaves, roots and lichens);
 - plant tissues (e.g. roots, bark, leaves and seeds) consumed for medicinal or other purposes (e.g. teas);
 - agricultural products (e.g. fruits, vegetables and mushrooms) grown in private gardens or orchards;
 - aquatic and terrestrial wildlife (and its by-products) produced solely for domestic consumption (e.g. ducks, chickens or other poultry, eggs and dairy products);
- provide baseline concentrations of contaminants in ambient air, drinking water and tissues of traditional foods consumed by Indigenous peoples and local communities. For game, the proponent should work with local Indigenous peoples to collect tissue samples where appropriate;
- ensure that the data are representative of site conditions; if surrogate data from reference sites are used rather than Project site-specific measurements, demonstrate how the data are representative of site conditions; and
- describe the level of food security and food sovereignty within local and Indigenous communities. Refer to the [Public Health Agency of Canada's website on food security](#) and to the *First Nations Food, Nutrition & Environment Study* for more information.

⁸ Refer to: University of Ottawa, University of Montreal, and Assembly of First Nations. 2014. *First Nations Food, Nutrition and Environment Study (FNFNES): Results from Ontario (2011-2012)* and University of Ottawa, University of Montreal, and Assembly of First Nations. 2019. *First Nations Food, Nutrition and Environment Study (FNFNES): Results from Quebec (2016)*.

Sections 6.2 “Sources of baseline information” and 27 “Part 2 – Reference documents”, refer to guidance to help establish the relevant baseline profile for human health. The proponent must refer to the Health Canada guides to ensure that best practices are followed in collecting baseline information for assessment of the project’s impacts on human health caused by changes in air quality, noise levels, the quality of drinking water and water used for recreational purposes, traditional foods and the multiple contaminant exposure routes. The proponent must justify any omission or deviation from the recommended baseline characterization approaches and methods, including the Health Canada guidelines.

9. Baseline conditions – Social context

Baseline information is required on existing social conditions and must include social well-being and social activities for all communities, including for Indigenous peoples. The scope and content of the baseline social conditions should be tailored to the specific project context, take into account community and Indigenous input, and include indicators and information that are useful and meaningful for the effects analysis. The information provided must:

- be sufficient to provide a complete description of the current state of each VC, including relevant trends;
- provide a comparison of data at the provincial, regional or national level, if possible, to better interpret baseline health and social conditions;
- describe how community and Indigenous knowledge was used in establishing baseline social conditions, including observations from diverse subgroups;
- describe baseline social conditions using disaggregated data to understand different access to resources, opportunities and services for diverse groups and subgroups (e.g. women, youth and elders) within the community to support GBA+; and
- describe the baseline conditions for each Indigenous community, applying GBA+, and taking into account community members who are considered particularly vulnerable to changes resulting from the project.

Baseline data can be found in secondary information sources, such as census data, government publications and academic literature, as well as in through primary sources, such as surveys, key informant interviews, or focus groups. In all instances, ethical guidelines and relevant cultural protocols governing research, data collection and confidentiality must be adhered to. This is particularly important in the case of information gathered and studies conducted with vulnerable subgroups.

In preparing a baseline for the social context, the proponent must identify the area of social influence of the project and develop a community profile. To understand the community context, the Impact Statement must describe:

- influences on community well-being (e.g. disposable income, cost of living, lifestyle; language; rates of alcohol and substance abuse, and of illegal activities and violence; rates of sexually transmitted infections and gender-based violence; etc.), including indicators proposed by each Indigenous people;

- community cohesion, including factors such as community or neighbourhood engagement, support, and social networks and other social activities;
- the psychosocial environment and its influence on community well-being;
- the socio-cultural environment, identifying Indigenous peoples and predominant cultural communities; demographic characteristics and major socio-cultural concerns of the population;
- access, ownership and use of resources (e.g. land tenure, minerals, food, water, social infrastructure);
- the capacity (currently available or planned) of institutions to deliver public services and infrastructure; and
- relevant historical community background.

The Impact Statement must describe baseline conditions for land and resource use, including:

- describe general patterns of human occupancy and of land resource use in the study area based on selected spatial and temporal boundaries (include maps, if possible);
- identify and take into account relevant local, regional, or provincial land use or resource development plans;
- describe sites or areas that are used by local people and Indigenous peoples either as a permanent residence or as a seasonal/temporary location, and the number of people using each identified site or area (include a map, if possible);
- identify remote, rural and urban residential areas (including seasonally and year-round occupied establishments), lands in a reserve within the meaning of subsection 2(1) of the *Indian Act*, Indigenous peoples and Indigenous traditional territories;
- identify agricultural areas (including special crops, orchards and vineyards);
- identify parks and recreation areas (including local and provincial/territorial parks and recognized scenic areas);
- identify Parks Canada lands, conservation areas, International Biological Program sites or other ecological reserves;
- identify industrial and commercial sectors;
- identify monitored or administered forest areas (including forests under agreement and areas designated for timber sales);
- identify registered or recognized hunting, trapping or guiding areas, recreational and commercial fishing areas, preferred harvesting areas; and
- identify water supplies and water lots, as well as water sources and intakes for farms, industries, residents and municipalities.

The Impact Statement must describe baseline conditions for navigation, including:

- identify and describe existing navigable waterways, and all their uses; and
- provide a list of potentially affected waterway users and concerns regarding waterway use and access.



The Impact Statement must describe the existing local and regional infrastructure facilities in the study area, including:

- road infrastructure and traffic safety;
- railways;
- pipelines, water mains and sewer lines;
- power lines;
- utilities; and
- any other potentially affected infrastructure and transportation routes.

The Impact Statement must describe the existing local and regional services in the study area, including:

- accommodation and lodging (e.g. affordability, availability, suitability), including camping facilities;
- recreation and parks;
- waste disposal;
- educational services, facilities and daycare;
- elder care and services;
- existing health services and programs, including health providers capacity;
- ambulance services;
- police and fire departments;
- social services; and
- all other potentially affected services.

The Impact Statement must describe the natural and cultural heritage, and provide maps for buildings, sites and things of historical, archaeological, paleontological or architectural significance in the study area. Natural and cultural heritage, as well as structures, sites or things of importance to communities, includes land, natural features and resources considered to be heritage, or a structure, site or thing that is distinguished by its archaeological, paleontological, historical or architectural significance.

10. Baseline conditions – Economic context

The economic baseline must document the local and regional economic conditions and trends based on the spatial and temporal boundaries selected. The scope and content of the economic baseline should reflect the specific project context, take into account community and Indigenous peoples input, and should include indicators and information that are useful and meaningful for the effects analysis. The information provided must:

- be sufficient to provide a comprehensive understanding of the current state of each VC, including relevant trends;

- describe how community and Indigenous knowledge from affected populations, including input from diverse subgroups, such as indigenous women, was used in establishing baseline conditions; and
- describe baseline economic conditions for diverse subgroups (e.g. women, youth, and elders) within the community to support GBA+.

Information on those likely to be directly or indirectly affected by the project must be provided taking into account community members considered particularly vulnerable to changes brought about by the project. As applicable, baseline economic conditions must be sufficiently disaggregated and analyzed to support the analysis of disproportionate effects under GBA+, by sex, age and ethnicity if possible.

The Impact Statement must:

- describe the main economic activities in the study area;
- provide an overview of current labour market statistics, including jobs likely to be in demand over the life of the project;
- describe the workforce, including the availability of skilled and unskilled workers, existing working conditions, wages and average salary range, full-time and part-time employment and training, and gender gaps such as for skilled trades and in wages and qualifications;
- describe the workforce, the demographic characteristics, economic concerns and economic aspirations for each Indigenous community;
- describe local and regional workforce development and training plans including those specific for Indigenous people;
- provide an overview of the businesses that could provide products and services required for the project;
- describe the demographic features of the local and regional population as well as the economic concerns and economic aspirations of residents, families and workers in the study area;
- provide an overview of the existing employment rates and economic well-being in the study area and impacted communities; and
- describe the current use of land and water bodies in the study area, including for food, social and ceremonial purposes, including as defined by Aboriginal and Treaty rights, and include a description of hunting, recreational and commercial fishing, trapping, outdoor recreation, use of seasonal cabins, outfitters, agriculture, forestry, and institutions.

Additional requirements related to economic context are outlined in Part 3 of the guidelines, section 7 “Economic and financial issues”.

11. Baseline conditions – Indigenous peoples

The proponent must engage with Indigenous peoples in developing baseline conditions, in order to identify and understand the potential impacts of the project on Indigenous peoples, and to incorporate Indigenous



knowledge into the Impact Statement. The results of any engagement must be presented in the Impact Statement, and must reflect the perspective of the Indigenous peoples involved as best as possible, as described in Section 5. *Description of engagement with Indigenous peoples.*

The proponent must provide Indigenous peoples with an opportunity to review the information prior to submission of the Impact Statement. The Impact Statement must indicate where input from Indigenous peoples, including Indigenous knowledge, has been incorporated and how it was considered in relation to scientific knowledge. Information should be specific to the individual Indigenous people involved in the assessment and include contextual information about the members within an Indigenous people (e.g. women, men, elders and youth).

Where Indigenous peoples do not wish to participate, the proponent is encouraged to continue to share information and analysis with the Indigenous peoples about the potential effects of the project and to use publically available sources of information to support the assessment, and to document their efforts in that respect.

The proponent must consult the Agency's guidelines on engaging Indigenous peoples, in particular the document [*Guidance: Assessment of Potential Impacts on the Rights of Indigenous Peoples*](#).

The Impact Statement must include contextual information, both historic and current, regarding an Indigenous people's history and cultural practices, land use, as well as the manner in which rights of Indigenous peoples are, or may be, exercised and impacted by the project, as identified by the Indigenous peoples. The contextual information may include the following:

- the physical and cultural heritage as well as any structure, site or thing that is of historical, archaeological, paleontological or architectural significance for each Indigenous people;
- the current use of lands and resources for traditional purposes;
- the health, social, and economic conditions of Indigenous peoples; and
- nature and extent of the rights exercised.

Contextual information in the Impact Statement must also include the relevant history of engagement with Indigenous peoples by previous proponents, according to the information provided by Indigenous peoples, including if and how Indigenous peoples were involved and the results of these efforts. The history of engagement activities should be examined from the perspective of Indigenous peoples. This information can be used to establish the baseline conditions regarding the demand for engagement on Indigenous peoples, which may affect mental health, and social and economic conditions. This history can also be used to shed light on how the proponent was able to take into account lessons learned from other projects in conducting its engagement activities.

11.1. Physical and cultural heritage, and structures, sites or things of significance

The Impact Statement must include a description of the baseline conditions associated with physical and cultural heritage and structure, site or thing of significance for Indigenous peoples. This description should



take into account an understanding of the historical baseline conditions associated with the ability to transmit culture, including through language, ceremonies, harvesting, teaching of sacred laws, traditional laws, stewardship laws, traditional knowledge.

Physical and cultural heritage as well as sites, structures or things of significance for Indigenous peoples include, but are not limited to, lands and resources deemed as heritage or a structure, a site, or a thing that distinguished itself by its archaeological, paleontological, historical or architectural significance.

Lands and resources designated as heritage, or of importance can correspond to elements also identified in the assessment for the current use of lands and resources for traditional purposes. Cultural and spiritual practices for Indigenous peoples are often integrally linked to specific sites and elements of the surrounding landscape, as well as things of social significance.

Information on heritage and structures, sites and things of significance for Indigenous peoples can include:

- burial sites;
- spiritual sites, including rivers and watercourses;
- oral history;
- teaching areas used to transfer knowledge between generations;
- cultural values and experiences on the land;
- Indigenous governance systems and Indigenous laws associated with the landscape;
- sacred, ceremonial or culturally important places and landscapes, plants, animals, objects, beings or things;
- the toponymy, language and other components that make up a culture;
- places with archaeological potential or artefacts; and
- sites occupied historically.

The Impact Statement must provide the location of physical and cultural heritage features on maps, if it has been shared by Indigenous peoples with the proponent and if they have authorized its release.

The proponent is invited to consult the [Technical Guidance for Assessing Physical and Cultural Heritage or any Structure, Site or Thing](#) on the Agency's Website.

11.2. Current use of lands and resources for traditional purposes

The Impact Statement must include information on the current use of lands and resources for traditional purposes (e.g. hunting, fishing, trapping, plant gathering, spiritual or ceremonial practices). The proponent must refer to the [Technical Guidance for Assessing the Current Use of Lands and Resources for Traditional Purposes under CEAA, 2012](#), on the Agency's website.



The baseline conditions must be validated by Indigenous peoples. The proponent must obtain the approval of Indigenous peoples to integrate this information into the Impact Statement or explain, as applicable, why the information was not validated or approved.

The Impact Statement must:

- include a description of the Indigenous governance systems and Indigenous laws associated with the current land and resource use for traditional purposes;
- present the location of reserves and Indigenous communities;
- describe traditional activities presently or historically practiced (e.g. hunting, fishing, trapping, gathering of plants or medicines);
- document the location of traditional use such as hunting, trapping and fishing camps, cabins, and gathering or teaching grounds;
- identify types of traditional resources important for traditional and cultural purposes (e.g. plants, fish, mammals, birds and other natural resources), and describe places where these resources are harvested. Identify those being species at risk and describe their traditional and cultural significance;
- document rotational harvesting practices and how they vary in time, such as berry and tea harvesting, bait harvesting and fishing, big game hunting and trapping of fur-bearing animals;
- document access and travel routes for conducting traditional practices;
- identify and describe all uses of banks, waterways and water bodies navigable by Indigenous peoples, such as for travel and recreation (e.g. canoe route and portage trails);
- document the waterways and water bodies used as drinking water sources;
- describe the frequency, duration and timing of traditional practices;
- where known, describe efforts by Indigenous peoples to bring back traditional practices;
- provide a description of country foods (traditional foods);
- document the quality and quantity of resources (e.g. preferred species and perception of quality);
- describe access to resources and land (e.g. physical access to harvestable species, culturally important harvesting locations, timing, seasonality, distance from community);
- describe the experience of the practice (e.g. connection to the landscape without artificial noise and sensory disturbance, air quality, visual landscape, perceived or actual contamination, etc.);
- describe the areas of cultural or spiritual value or significance;
- describe other current uses recognized by Indigenous peoples;
- consider the unique traditional knowledge of Indigenous peoples about the environment and ecology; and
- take into account the capacity of indigenous peoples to collect information on all aspects identified in relation to the current use of lands and resources for traditional purposes.

The information should be provided in sufficient detail to allow analysis of the effects on Indigenous peoples that result from changes to the environment and on health, social and economic conditions. If this type of information is found in public sources, the proponent must, to the extent possible, inform the



Indigenous peoples and give them a reasonable opportunity to review and comment on it before including it in the Impact Statement.

11.3. Health, social and economic conditions

The baseline conditions established in the above sections 8 “Baseline conditions – Human health”, 9 “Baseline conditions – Social context”, and 10 “Baseline conditions – Economic context” include general and specific requirements for Indigenous peoples, including GBA+ requirements specific to Indigenous peoples.

The baseline conditions established for Indigenous peoples must take into account Indigenous governance regimes and Indigenous laws associated with health and socio-economic conditions.

11.4. Conditions related to the rights of Indigenous peoples

The Impact Statement must document the nature and extent of the exercise of the rights of the Indigenous peoples, potentially impacted by the project, as identified by the Indigenous peoples. Indigenous peoples may also provide their perspective through consultations with the Agency. Indigenous peoples must be involved in the choice for the scoping and assessment of the nature and extent of the exercise of rights of Indigenous peoples.

The information related to rights may include, but is not limited to, the following:

- a general description of the rights of Indigenous peoples potentially affected by the project, including historic, regional and community context. The description should include maps, when available, to illustrate the location of areas with titles, land claims and traditional territories;
- the quality and quantity of resources needed to support the exercise of rights (e.g. preferred species);
- access to the resources needed to exercise rights (e.g. physical access to culturally important locations, timing, seasonality, distance from the community);
- the experience associated to the exercise of rights (e.g. noise and sensory disturbances, air quality, visual daytime and nighttime landscapes);
- specific areas of cultural importance where rights are exercised;
- landscape conditions that support the Indigenous peoples’ exercise of rights (e.g. large, intact and diverse landscapes, areas of solitude, connection to landscape);
- the Indigenous governance systems and Indigenous laws associated with the exercise of rights;
- where possible, information about the members of an Indigenous people and their role in the exercise of rights (e.g. women, men, elders, youth, persons with disabilities);
- how the Indigenous peoples’ cultural traditions, laws and governance systems inform the manner in which they exercise their rights (who, what, when, how, where and why);

- where they exist, identification of thresholds identified by the community that, if exceeded, may impair the ability to meaningfully exercise rights;
- maps and relevant data sets (e.g. overlay of the project footprint, places of cultural and spiritual importance, traditional territories, fish catch numbers); and
- pre-existing impacts and cumulative effects that are already interfering with the ability to exercise rights or to pass along Indigenous cultures and cultural practices (e.g. language, ceremonies, Indigenous knowledge).

12. Effects assessment

12.1. Methodology

The Impact Statement must describe the project's potential direct and indirect adverse and positive effects in relation to each phase of the project (construction, operation, maintenance, decommissioning, and abandonment). If the details cannot be provided (e.g. for future events such as abandonment), a rationale must be provided for the absence of details, as well as a more general description of the expected activities and effects. The environmental, health, social or economic effects may be described in terms of the context, magnitude, geographic extent, ecological context, timing, duration and frequency, and whether they are reversible or irreversible. The spatial scoping of the assessment will vary depending on the VC and should be consistent with the spatial boundaries that were established for baseline data collection. If there is an ongoing or completed regional assessment in the proposed project area, the proponent should use the information generated through that process to inform the effects assessment. As applicable, the effects assessment must be sufficiently disaggregated and analysed to support the analysis of disproportionate effects as per the GBA+.

The assessment of the effects of each of the project components and physical activities, in all phases, must be based upon a comparison of baseline environmental, health, social and economic conditions, and the predicted future conditions with the project and the predicted future conditions without the project. Predictions must be made on clearly stated assumptions and the Impact Statement must clearly describe how it has tested each assumption.

The description of the effect can be either qualitative or quantitative. Effects must be described using criteria to quantify or qualify adverse effects, taking into account any important contextual factors. With respect to quantitative models and predictions, the Impact Statement must detail the model assumptions, parameters, the quality of the data and the degree of certainty of the predictions obtained. For other effects, it may be more appropriate to use other criteria, such as the nature of the effects, directionality, causation and probability. The effects assessment should also set out the probability or likelihood of that effect occurring and describe the degree of uncertainty related to the data, information and methods used. In any cases, ethical guidelines and relevant cultural protocols governing research, data collection and confidentiality must be adhered to.



The perception of the same effect may vary among different individuals, groups and communities. Consequently, characterizing effects should take into account the level of concern expressed through engagement with the affected Indigenous peoples and community members. There are tools that can assist with these predictions and analyses, including multi-criteria analysis, risk assessment, modelling, in addition to seeking out expert and stakeholder input. Effects should be characterized using language most appropriate for the effect (e.g. impacts on rights of Indigenous peoples and health and social effects may be described differently from biophysical effects).

The assessment of effects, should take into account interactions between the project and past, present and reasonably foreseeable physical activities to be carried out, as described in section 21 “*Cumulative effects assessment*”.

“Requirements related to geospatial data” and “Requirements related to reference documents” outlined in section 6 apply to the following sections as well.

12.2. Interactions between effects and valued components

Although the requirements set out in these Guidelines are separated by environmental, health, social or economic conditions and elements, the Impact Statement must consider and describe the interactions between the environmental, health, social and economic effects, as well as the interaction and interconnectedness of selected VCs, while taking into account community values.

For example, an adverse environmental effect on water could also have an adverse effect on human health. That same adverse environmental effect on the physical component ‘water’ could result in an adverse environmental effect on the biological component ‘fish’ that could in turn have an adverse social effect on fishing and/or an adverse economic effect on an outfitter that provides guiding services. Alternatively, this pathway could also be impacted by a positive effect on water (e.g. in remediation-related projects). Considering and describing effects holistically, both positive and negative, requires taking a systems approach that considers interactions between VCs and with other environmental, health, social and economic factors.

13. Anticipated changes to the natural environment

The changes to the components of the natural environment described below are related to other components within the broader ecosystem framework. The description of the changes caused to the natural environment must be integrated into the assessment of the effects of each VC and the interaction between the VCs in the Impact Statement. An alternative approach is to identify these natural environment components as VCs in their own right. The interconnections between environmental VCs and social, health and economic VCs, and the interactions between effects should also be described.

13.1. Changes to the atmospheric, acoustic and visual environment

The Impact Statement must describe all interactions between the project and the atmospheric, acoustic and visual environment, including:

- an accurate estimate of emissions at all project phases (construction, operation, and decommissioning abandonment) and for all sources associated with the project;
- a detailed description that includes the characteristics of all contaminant emission sources including, but not limited to, off-road and on-road equipment, compressor stations, generators, fugitive emissions, dust from unpaved roads, maintenance activities, start-up and running-in operations, flaring, burning (note that open burning is prohibited in Quebec except in certain cases. The proponent should inquire about provincial requirements);
- a quantitative assessment of all potential emissions of criteria air contaminants, during all project phases, including: nitrogen oxides, hydrogen sulphide, sulphur dioxides, ozone, diesel particulate matter (PM) from engine combustion, VOCs (benzene, toluene, ethylbenzene, xylene, acetaldehyde, formaldehyde), PAHs, mercaptan, carbon monoxide, and particulate matter (total PM, PM₁₀ and PM_{2.5});
- quantitative assessment of the deposition of dust and other contaminants on sensitive receptors including dust deposition resulting from construction activities;
- detailed information on emission estimation methodologies for all project phases;
- established methods to estimate emissions from all sources, including but not limited to those from on-road and off-road activities;
- an assessment of project emissions that could contribute to or increase current levels of ground-level ozone;
- an atmospheric contaminant dispersion model for each of the three compressor stations during the operation phase should they be supplied with natural gas;
- a complete list of sources of air pollutant emissions that may affect ambient air quality (emissions from heavy machinery, boilers and heaters, fugitive dust from vehicle traffic and soil handling, fuel combustion by-products, blasting by-products);
- details on the configuration of the atmospheric dispersion models used, including meteorology, land use, modelling domain, receptor grid density, land users, default options and chemical and physical transformation parameters, where applicable;
- a description of source characteristics (e.g. point emissions, volume sources, area sources, diffuse sources, flare emissions, and fugitive sources);
- a description the changes to the environment related to blasting activities, including particulate emissions, air overpressures and vibrations;
- emission rates for all project sources, including emission factors (with methodology, uncertainty and references) and all related assumptions and parameters that would allow the calculations to be replicated (provide sample calculations);

- maps of isopleths at the appropriate scale (i.e. that permit to clearly visualize the extent of dispersion and sensitive receptors) illustrating the predicted emissions for the modelling scenarios;
- a comparison of predicted air quality concentrations at potential receptors, including traditional land use sites, against the CAAQS for fine particulate matter (PM_{2.5}), sulphur dioxide, nitrogen dioxide and ozone. Predicted concentrations of other air pollutants relevant to the project should be compared to appropriate provincial standards, if applicable and as described in section 7.1 “Atmospheric, acoustic and visual environment quality” (e.g. carbon monoxide and total PM). Assessment regarding the CAAQS should be based on the principles of continuous improvement and keeping unpolluted areas clean, and in the context of airsheds and air zones of the Air Quality Management System;
- for air pollutants with standards (e.g. CAAQS, NAAQOs, Ministère de l’Environnement et de la Lutte contre les changements climatiques du Québec, or AAQC), use the averaging period and statistical form associated with the standard;
- document and justify the contaminant emission reduction efficiencies applied in the calculation of emission rates, including details of all assumptions associated with these mitigation measures and their feasibility;
- a description of participation in national or regional air emissions monitoring and reporting programs (e.g. National Pollutant Release Inventory) or explain why participation is not required;
- a description of any methods and practices (e.g. control equipment, heat or gas recovery systems during operation phase, dust control during the construction phase) to be implemented to reduce and control emissions. If the best available technologies are not selected in the project design, the proponent will have to justify the selected technologies;
- details on the achievement of emission standards for all mobile and stationary engines used in the project;
- a description of the changes in ambient vibration and sound levels resulting from the project, including changes in the perception of non-anthropogenic noise at key and sensitive receptors, including traditional land use sites;
- where there is public concern associated with an increase in sound levels during construction, provide a vibration and noise impact assessment, including an overview of the concerns;
- if the project would result in an increase in sound emissions during construction, operation or maintenance:
 - quantify sound levels at appropriate distances from any project facilities and describe for each sound source the timing (e.g. hours of nighttime activities), the duration of sound events and their characteristics, including the frequency spectrum;
 - describe the locations and characteristics of the most sensitive receptors, including species at risk;
 - describe consultations with regulators, stakeholders, community groups, landowners and Indigenous peoples regarding potential effects on the acoustic environment; and
 - provide a noise management plan for the construction and operation phases, including the identification of noise sources, an assessment of current noise mitigation measures, the effectiveness of the performance of noise control devices, best practice programs and continuous improvement programs, and determine the need for follow-up monitoring for the purpose of model

validation or due to concerns raised by the public. Noise management plans should address the following: notification and planning of maintenance activities, such as express purging and ventilation of equipment during daylight hours; notification of nearby residences and local authorities regarding noise prevention and management plans and procedures;

- with regard to the assessment of the sound impacts of booster stations during the operation phase, indicate whether the sounds from the stations would be tonal or broadband, the anticipated sound levels at key and sensitive receivers, and whether low-frequency sounds would be generated;
- the distribution of the reference nighttime sound events relative to the individual sound events expected at night at the location of each receptor;
- take into account expectations of peace and quiet for receptors (e.g. in a quiet rural area or during land use by Indigenous peoples) and noise policies (e.g. processes for resolving and dealing with public complaints);
- specify and justify the approach used to determine the extent to which noise effects resulting from the project are adverse and describe any changes in nighttime lighting levels resulting from the project;
- a description of any changes in nighttime levels resulting from the project;
 - quantify light levels at appropriate distances from any project facilities, including the timing (e.g. night hours), frequency, duration, distribution and character of light emissions;
 - describe the locations and characteristics of the most sensitive receptors, including species at risk and areas favoured by Indigenous peoples for the practice of traditional activities;
 - describe consultations and, where appropriate, provide a record of engagement with regulators, stakeholders, community groups, landowners and Indigenous peoples regarding potential effects on the visual environment; and
- a description of any positive changes.

The proponent should refer to Health Canada's [Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise](#) and [Guidance for Evaluating Human Health Impacts in Environmental Assessment: Air Quality](#) to ensure that it provides the information and analysis considered necessary to assess the project's impacts on human health in relation to changes to the sound environment and air quality. It is requested that the proponent complete the checklists provided in these guides (Appendix B in the noise guide and Appendix A in the air quality guide) to assist participants in verifying that the main elements of a noise or air quality impact assessment have been completed and in identifying the location of this information in the Impact Statement. These checklists will facilitate the review of the Impact Statement and will be particularly useful if analyses on these aspects are found in several sections of the Impact Statement.

13.2. Changes to groundwater and surface water

The Impact Statement must describe all interactions between the project and groundwater and surface water, including:

- identify locations of interaction of the project with surface water and groundwater;

- describe possible changes to flows or fluxes and any effects resulting from these changes;
- identify nearby wells, providing criteria for the spatial boundaries considered (i.e. 10 km buffer zone on either side of the pipeline route), and describe how the quantity and quality of well water could be affected;
- describe the contaminants potentially associated with the project that could affect surface and groundwater quality;
- provide an assessment of the outwards movement of groundwater affected by the project and an analysis of the contaminant mitigation capacity within the hydrogeological units in the project area, to identify the potential for off-site groundwater and surface water contamination;
- indicate the water withdrawal requirements during construction work and specify:
 - the quantity and quality of water withdrawn from the environment (flow rate or volume);
 - any treatment carried out on these waters (e.g. addition of a tracer);
 - the conditions under which this water is released into the receiving environment (location of re-injection, techniques used, volumes, flow rates, duration, persistence of contaminants);
- describe any changes in habitat structure (e.g. streambed, aquatic vegetation, benthic communities);
- describe any other changes to the water body or watercourse;
- describe the changes caused by project activities on water quality and quantity in the receiving environment, including those associated with watercourse and water body crossings, blasting, diversions and dewatering, water withdrawal and wastewater return, seepage from piles of material and other tailings, overflows from excavation or drilling trenches, and surface runoff;
- provide an estimate of the potential for materials removed during excavation and drilling to be sources of acid rock drainage or metal leaching, the areas and volumes affected, and an estimate of the time that could elapse before acid rock drainage or metal leaching occurs; and
- describe the methods used and results in order to estimate acid rock drainage and metal leaching on samples of rock material from excavation and drilling.

The proponent should refer to Health Canada's [Guidance for Evaluating Human Health Impacts in Environmental Assessment: Drinking and Recreational Water Quality](#) to ensure that it provides the information and analysis considered necessary to assess the project's effects on human health in relation to changes to water quality. It is requested that the proponent complete the checklist provided in this guide (Appendix A) to assist participants in verifying that the main elements of a water quality Impact Assessment have been completed and in identifying the location of this information in the Impact Statement. This checklist will facilitate the review of the Impact Statement and will be particularly useful if analyses on this aspect are found in several sections of the Impact Statement.

13.3. Changes to riparian, wetland and terrestrial environments

The Impact Statement must describe all the interactions between the project and the riparian, wetland and terrestrial environments, including:

- provide an overall description of changes related to landscape disturbance, including, but not limited to, habitat fragmentation, alteration of riparian strips and the effects of the project on areas of soil instability;
- quantify the area of riparian, wetland, and terrestrial environments, that may be cleared or otherwise disturbed during project construction and operation activities;
- describe any hydrological or water flow changes, either permanent or temporary, that could alter moisture regimes or drainage conditions, and describe the effects on vegetation and wetlands, including impacts on fish and fish habitat where applicable;
- describe any changes in soil quality, compaction, erosion, and soil loss that could result in a loss of soil productivity including the risk of collapse if the pipe is to remain buried during post-decommissioning period;
- describe methods for clearing and maintaining the project right-of-way and other project components and the potential effects on the quality of drinking water sources, species, biodiversity and species of (cultural, traditional, or other) importance to Indigenous peoples;
- assess the quantity, marketability and location of any commercial timber to be removed during construction of the project;
- identify any other forest resources that may be harvested by Indigenous peoples prior to and during the construction of the project;
- describe changes related to the construction of the project on nearby eskers and on lichen growth that could have an effect on caribou habitat;
- describe the nature of the surface formations as well as the depth at which the pipeline will be installed including a map (at the appropriate scale) of the eskers found therein;
- indicate whether eskers will be affected to a much greater degree than their prevalence on the landscape, and describe this at the landscape scale rather than a single multi-hectare assessment;
- describe the potential changes on soils and sediments of trenching, drilling, underground infrastructure burial and compaction, stream and water body crossings, dewatering, diversions, and water withdrawals (e.g. hydrostatic testing). This includes changes in topography, erosion, altered bank slopes and re-suspension of sediment;
- describe the risk of soil and sediment contamination taking into account historical land use, as well as the potential for loss of soil fertility. Describe any known or suspected soil contamination in the study area which may be re-suspended, discharged or otherwise disturbed as a result of the project; and
- describe any positive changes (e.g. offsets that result in revegetation, new wetlands, etc.).

14. Effects on valued components – Environment

14.1. Fish and fish habitat

The Impact Statement must describe the potential effects (positive and negative, direct and indirect, temporary and permanent) on fish and fish habitat within the meaning of subsection 2(1) of the *Fisheries Act*. Without limitation, for each water body and watercourse affected by the project, the following must be documented and considered in the determination of effects:

- the crossing techniques and the criteria for determining the proposed techniques for each crossing;
- geomorphological and hydrodynamic changes and their effects conditions and fish and fish habitat (e.g. encroachment into the aquatic environment, substrate modification, dynamic imbalance, clogging of spawning grounds, etc.);
- changes in hydrological and hydrometric conditions on fish habitat and the life cycle activities of fish species (e.g. reproduction, rearing, feeding and growth, movement and migration, winter refuge, and any changes within aquatic invertebrate communities), including, where appropriate, on species at risk. For example, any changes in fish passage conditions and how unimpeded fish migrations and movements will be maintained in the watercourses during and after pipeline construction should be described;
- the potential effects of project activities on riparian areas that could affect fish and fish habitat. For example, the removal or alteration of shoreline vegetation at watercourse and watercourse crossings that may affect fish and fish habitat by increasing runoff and sediment transport;
- the risk of fish mortality associated with noise caused by project activities in or near the aquatic environment (e.g. blasting), or by fish entrainment during water pumping (e.g. for placement and maintenance of cofferdams in the aquatic environment) or water withdrawal activities (e.g. hydrostatic testing). Where appropriate, an assessment of mortality should be provided (species, number of individuals, etc.);
- the risks associated with the introduction of deleterious substances into the aquatic environment frequented by fish (e.g. drilling mud and sedimentation). Emphasis should be placed on prevention;
- the risks associated with the introduction of invasive species into the aquatic environment frequented by fish due for example, to the use of the same equipment and apparatus for crossing water bodies and watercourses;
- the effects on fish and fish habitat of discharges to the aquatic environment of waters used for hydrostatic testing;
- the effects on fish populations of access to fishing grounds by workers or recreational boaters resulting from an increase in these users or new access routes caused by the project;
- the effects of land fragmentation on fish habitat;

- anticipated changes in the composition and characteristics of provincially or federally listed fish populations and aquatic species at risk;
- any alteration and use of habitat (including the ability to access habitat), including, where applicable, the residence and critical habitat of species at risk;
- contaminant levels in harvested species and their prey, with a focus on traditional foods harvested by Indigenous peoples; and
- any other effects that may affect fish and fish habitat as a result of the project.

The Impact Statement must:

- include an examination of the correlation between construction periods and sensitive periods for fish (e.g. reproduction), and any potential effects due to overlapping periods;
- describe any need for a *Fisheries Act* authorization or a permit under the SARA and describe any review of Fisheries and Oceans Canada guidance documents; and
- evaluate, where applicable, anticipated habitat losses (temporary or permanent) in terms of area, sensitivity of habitat lost (e.g. resilience of affected species and their dependence on habitat, habitat scarcity, habitat resilience, contribution to fisheries productivity, species at risk, etc.) and significance (e.g. magnitude, intensity and persistence). Habitat losses must be clearly located and described. It is recommended that the information be collected in the form of a map at appropriate scales, as well as in the form of a table.
- The Impact Statement must also take into account the tolerance thresholds for potential adverse effects that the Indigenous peoples have identified.

14.2. Birds, migratory birds and their habitat

The Impact Statement must describe the interactions between the project and birds, migratory birds and their habitat, including:

- describe the potential direct and incidental, positive and adverse effects to birds, including population level effects that could be caused by all project activities, including:
 - site preparation or vegetation removal;
 - deposit of harmful substances in waters that are frequented by birds;
 - the deposit of dust on trees and birds' nests;
 - flaring of gas; and
 - site reclamation;
- analyze the predicted effects for (1) all birds, (2) each VC, and (3) priority BCR species, and include relevant effects described in Appendices 2 and 3. Include separate analyses for each activity, component and project phase. Distinguish between migratory and non-migratory birds. Consider sources of error for all analyses to ensure that the final effects predictions indicate the best estimate of precision;

- wherever possible, non-linear, indirect and synergistic responses to the project should be explicitly explored;
- any assumptions regarding relocation should be justified using scientific references and surveys should provide evidence that there is available habitat to allow relocation under a variety of population scenarios. For example, it should be clear that a growing population will not be limited by habitat loss along the project area;
- describe short- and long-term changes to habitats and food sources for migratory and non-migratory birds (types of cover, ecological units of the area in terms of quality, quantity, distribution, and functions), including losses, structural changes, and fragmentation of riparian habitats (e.g. aquatic grasslands and intertidal marshes), terrestrial environments (e.g. grasslands, woodlands, old-growth forests, post-fire areas), and wetlands frequented by birds;
 - consider important habitats, including: forests, riparian buffer zones, ombrotrophic or minerotrophic bogs, other wetland areas, eskers and other similar geological formations, and open waters;
- describe changes in bird-habitat relationships, biodiversity, abundance and density of the avian community which involve various ecosystems and habitat types;
 - particular attention will have to be paid to the change in detection before and after the project is carried out. For example, linear structures allow larger detection distances as described in the article [Experimentally derived detection distances from audio recordings and human observers enable integrated analysis of point count data](#) (Yip et al., 2017). Therefore, any estimates of abundance or occurrence should reflect differential detection;
- describe the change in mortality risk, including as a result of the collision of migratory birds with gas flaring emissions, project infrastructure, vessels and vehicles;
 - surveys should cover a time window that includes a variety of uses of the project area by day and night species;
 - indirect effects must be considered, such as increased movement of predators, in assessing and predicting mortality effects;
- describe the incidental effects caused by increased disturbance (e.g. sound, light, presence of workers), relative abundance of movement considering critical periods for birds, including breeding, migration and overwintering;
 - if a temporary relocation hypothesis is made during the operational phases of the project, support the hypothesis with scientific evidence or through study and monitoring within the project area as the project proceeds; and
- describe the potential direct effects of contaminants and bioaccumulation of contaminants on resident and migratory birds, including those that may be consumed by Indigenous peoples.

The Impact Statement must also take into account the tolerance thresholds for potential adverse effects that the Indigenous peoples have identified.

For an overview of the potential effects of pipeline projects on birds, the proponent can refer to [A framework for the scientific assessment of potential project impacts on birds](#), to Appendices 2 and 3 of these Guidelines, and to the [Migratory birds environmental assessment guideline](#).

14.3. Vegetation and other wildlife and its habitat

The Impact Statement must describe the interactions between the project and wildlife and their habitat, including the following:

- describe the potential direct and incidental, positive and adverse effects on wildlife and its habitat and vegetation, including population-level effects that could be caused by all project activities, including any linear access corridors (roads, transmission lines, rights-of-way), particularly in the vicinity of wetlands, lake and riparian habitats and on migration corridors;
- provide an assessment of the effects of any new road access or right-of-way on wildlife mortality risk and movement patterns;
- describe the effects on wildlife biodiversity considering biodiversity parameters, effects of fragmentation or loss of habitat, and changes to regional biodiversity, coming from for instance:
 - loss and fragmentation of forest cover;
 - the introduction of invasive species;
 - increased wildlife predation along the pipeline right-of-way during all phases of the project;
 - the degradation of wild animal populations due to increased access by hunters to the right-of-way of the pipeline and to roads and corridors;
 - noise and light pollution on fauna and light pollution on flora; and
 - diseases or other elements affecting the health of wild species (e.g. contamination);
- describe the potential direct effects of contaminants, including atmospheric emissions and dust deposition, and bioaccumulation of contaminants in wildlife;
- describe the potential direct and indirect effects of noise and vibrations in the project area on the uses of this area by wildlife;
- describe the potential direct and indirect effects of artificial light in the project area on the uses in this area by wildlife and on migratory behavior of wildlife;
- describe the effects on pollinators;
- describe methods for clearing and maintaining the pipeline right-of-way and the potential impact on species, biodiversity;
- include and identify the species mentioned as being important for indigenous peoples and local communities in the effects assessment; and
- describe changes to the primary habitat of species important to current use of lands and resources for traditional purposes by Indigenous peoples.

Resources from the Quebec and Ontario provincial governments should be considered as a source of information on appropriate methodologies for predicting effects on wildlife and vegetation (see section 6.2. *Sources of baseline information*).

The Impact Statement must also take into account the tolerance thresholds for potential adverse effects that the Indigenous peoples have identified.

14.4. Species at risk

The Impact Statement must describe the potential direct and incidental, positive and adverse effects of the project on species at risk listed under Schedule 1 of SARA and, where applicable, on their critical habitat (including its extent, availability and the presence of biophysical attributes).

The analysis of potential effects should be provided separately for each species at risk, including separate analyses for each activity, component and phase of the project. To fully understand the effects or benefits of one alternative over another, all parameters relevant to species at risk should be considered.

Concerning the description of the effects on bats, the Impact Statement must:

- consider all effects on feeding habitats, hibernacula, resting sites, maternity wards and movement corridors when assessing effects on local and regional populations; and
- identify potential resting areas, maternity wards, hibernacula, feeding habitat and movement corridors in the local area, as well as the project's potential impacts on these habitats or on their particular functions for bats. Where artificial resting places (i.e. buildings) are rare on the landscape, special attention should be paid to identifying natural structures.

Concerning the description of the effects on caribou, the Impact Statement must:

- provide an assessment of potential negative effects on boreal caribou habitat (e.g. at the QC-1 range scale);
- assess the effects of all linear disturbances (e.g. new road access or rights-of-way) on caribou, including movements between seasonal habitats, to account for functional habitat loss and effects of increased predation. In this assessment, apply a 500-metre buffer to the mapped anthropogenic features to adequately represent the combined effects of increased predation and trends in disturbance trends on the critical habitat of caribou population at the national scale. Consult the [*Scientific assessment to inform the identification of critical habitat for woodland caribou \(*Rangifer tarandus caribou*\), boreal population, in Canada*](#);
- use population-level modelling to assess the effects of proposed disturbance on caribou at the scale of federal range boundaries (QC-1);
- with respect to the effects on undisturbed habitat at the range scale:
 - provide an account (and GIS file if available) of added project disturbance using a 500-metre buffer, using the following formula: for range QC-1 with less than 65% undisturbed habitat: (project footprint + 500-metre buffer) – (area of permanent alterations + 500 metres);
 - Disturbed habitat is defined as habitat exhibiting: (i) anthropogenic disturbance visible on 1:50,000 Landsat imagery, including habitat within a 500-metre buffer of anthropogenic disturbance and/or (ii) fire disturbance within the last 40 years, based on data provided by provincial and territorial jurisdictions.
 - Permanent alterations represent existing developments within a range such as industrial and urban developments, permanent infrastructure, and graded or paved roads that currently or potentially lack the biophysical characteristics of critical boreal caribou habitat; and

- determine whether the project is expected to compromise the ability of ranges to be maintained at the disturbance management threshold and provide a rationale for the conclusion;
- with respect to effects on biophysical attributes as defined in Appendix H of the Boreal Caribou Recovery Strategy, determine whether the project is expected to remove or alter biophysical attributes necessary for the recovery or survival of boreal caribou and provide a rationale for the conclusion;
- with respect to effects on connectivity, determine whether the project is expected to result in a reduction of connectivity within or between the ranges and provide a rationale for the conclusion.
 - evaluate habitat and connectivity at the local, regional and range scales using quantitative methods (e.g. habitat quality analysis, etc.).
 - in addition, where telemetry data are available, evaluate movements of collared individuals using quantitative methods (e.g. step analysis) to determine existing movement corridors and how these may be affected by project development;
- with respect to the effects of predation:
 - determine whether the project is expected to result in an increase of predator and/or prey access to undisturbed areas and provide a rationale for the conclusion; and
- with respect to the effects on individual and population status at the range scale, provide:
 - the best available information from the MFFP regarding population size and trend;
 - an assessment of the potential adverse effects of the project on population status (size and trend) at the federal range scale; and
 - an assessment of the potential adverse effects on boreal caribou (e.g. sensory disturbance, mortality, pollution), including legal harvesting by Indigenous peoples.

In addition to species at risk listed under Schedule 1 of SARA, the Impact Statement must describe the potential direct, indirect and cumulative adverse effects of the project on species protected under provincial legislation, on ecological communities, and on species assessed by the COSEWIC as extirpated, endangered, threatened or of special concern (flora and fauna), as well as on the potential habitat of these species that are not currently listed under SARA. Each of these species should be considered separately as a VC.

The Impact Statement must:

- identify critical periods (e.g. denning, rutting, spawning, calving, breeding, resting), setback distances or other restrictions related to these species;
- identify provincial, territorial or federal authorizations or permits that may be required in relation to the species at risk;
- provide survey results and detailed mapping of each species at risk and their habitat, including significant habitat features;
- clearly identify the locations of federal and non-federal lands within the study area and differentiate between them in the presentation of information regarding species at risk:

- for example, total habitat disturbance for boreal caribou should be presented at the range scale, but it should also be presented in a manner that clearly indicates critical habitat disturbance within federal lands;
- describe the discussions held with the appropriate federal authority (Environment and Climate Change Canada, Fisheries and Oceans Canada, Parks Canada) to obtain a SARA permit;
- describe all reasonable alternatives to the project that would avoid the potential effect on the species and its habitat, with particular attention to critical habitat;
- describe all feasible measures that will be taken to avoid or mitigate the impacts of the project on the species and their critical habitat;
- demonstrate that avoidance and mitigation measures will be applied for species at risk. Recovery strategies will provide information such as population and distribution objectives, and strategic direction for recovery;
- describe the residual effects that are likely to result from the project after avoidance and minimization measures have been applied, including the extent, duration and magnitude of the effects on the number of individuals killed, harmed and harassed; as well as on the number of residences damaged or destroyed;
- describe the surface area, biophysical attributes and location of habitat, including critical habitat affected (e.g. destroyed, permanently altered, disturbed); and
- take into account the direct and indirect effects due to vibration and artificial light in the project area on usage patterns and migratory behaviour of species at risk.

The Impact Statement must also take into account the tolerance thresholds for potential adverse effects that the Indigenous peoples have identified.

With respect to effects on bird species at risk, the information required is presented in section 14.2 "Birds, migratory birds and their habitat".

14.5. Climate change

The following requirements are based on the [Strategic Assessment of Climate Change \(SACC\)](#) developed by Environment and Climate Change Canada (ECCC). This document provides guidance on climate change information requirements throughout the impact assessment process.

With regards to GHG emissions, the Impact Statement must provide:

- a description of each of the project's main GHG emission sources and their estimated annual GHG emissions over the lifetime of the project;
- net GHG emissions by year for each phase of the project based on a project's maximum capacity, as outlined in section 3 of the SACC. In this calculation include fugitive and discharge emissions and consider the scenarios where turbines of natural gas compression stations are powered by natural gas or electricity;

- each term of Equation 1 of the SACC (direct GHG emissions, acquired energy GHG emissions, CO₂ captured and stored, avoided domestic GHG emissions and offset credits, if applicable), per year for each phase of the project;
- emissions intensity for each year of the operation phase of the project in kt CO₂e/m³ or equivalent;
- the quantity and a description of the "units produced" used in Equation 2 of the SACC for each year of the operation phase of the project;
- methodology, data, emission factors and assumptions used to quantify each element of the net GHG emissions;
- a discussion on the development of emissions estimates and uncertainty assessment;
- a description of large sources of GHG emissions that may be the consequence of accidents or malfunctions; and
- an assessment of the GHG emissions upstream of the project, as described in the SACC and in section 28 "Part 2 – Appendix 1: Assessment of upstream greenhouse gas emissions", which includes the following components:
 - a quantitative estimate of the upstream GHG emissions associated with the project, based on the maximum capacity of the project, including information on the method, the data, the assumptions and the approach to estimate upstream GHG emissions; and
 - a qualitative analysis of the effect of the growth of upstream GHG emissions, describing the conditions according to which the estimated upstream emissions could occur, regardless of whether the project is carried out.

With regards to carbon sinks, the Impact Statement must provide:

- a qualitative description of the project's positive or negative effects on carbon sinks;
- a description of project activities in relation to significant landscape features such as topography, hydrology and regionally dominant ecosystems;
- land areas directly impacted by the project, by ecosystem type (forests, cropland, grassland, wetlands, built-up land) over the course of the project lifetime; this includes the areas of restored or reclaimed ecosystem(s);
- initial carbon stocks in living biomass, dead biomass and soils (by ecosystem type) on land directly impacted by the project over the course of the project lifetime;
- fate of carbon stocks on directly impacted land, by ecosystem type: immediate emissions, delayed emissions (timeframe), storage (e.g. in wood products); and
- anticipated land cover on the impacted land areas after the project is in place.

With regards to federal emissions reduction efforts and on global GHG emissions, the Impact Statement must provide:

- an explanation of how the project may hinder or contribute to Canada's efforts to reduce GHG emissions, if applicable. For example, the Impact Statement may be able to explain how the project would result in GHG emission reductions in Canada (e.g. by replacing higher emitting activities); and

- a discussion on how a project could impact global GHG emissions, if applicable. This could include, for example:
 - if there is a risk of carbon leakage if the project is not built in Canada, the Impact Statement could include an explanation of the likelihood and possible magnitude of carbon leakage if the project is not approved; and
 - if the project may displace emissions internationally, the Impact Statement could describe how the project is likely to result in global emission reductions. For example, a project that enables the displacement of high-emitting energy abroad with lower emitting energy produced in Canada could be considered as having a positive impact.

15. Effects to valued components – Human health

Social, economic, health, and biophysical effects are interconnected. Change in any one of these domains will often lead to changes in the others. The proponent must assess the adverse and positive effects of the project on human health. Interconnections between human health determinants (e.g. between behavioural factors such as healthy eating and biological factors such as chronic stress or exposure to contaminants) and other VCs must be described, as well as the interactions between effects, especially when the proponent foresees a potential indirect effect.

The proponent must describe how Indigenous and community knowledge was used to collect baseline data and assess health effects across diverse subgroups for which the effects could vary, where possible. In assessing effects, the analysis should consider circumstances in a community where diverse subgroups could, because of their particular circumstances in a community, experience adverse effects from the project more severely than others or be excluded from potential benefits. As for Indigenous peoples, the data must be presented separately for each Indigenous people, and should be broken down by community.

Applying a determinants of health approach in the assessment of human health effects is recommended to support the identification of linkages and effect pathways between VCs as well as of disproportionate effects across subgroups.

The following references contain best practices for health impact assessment methods, which the proponent is encouraged to consult:

- [Minimum Elements and Practice Standards for Health Impact Assessment, Version 3](#) (Bathia et al, 2014);
- resources from the [National Collaborating Centre for Healthy Public Policy](#);
- the [Health Equity Impact Assessment \(HEIA\) Tool](#) by the Ministry of Health of Ontario; and
- [Health impact assessment. A guide for the oil and gas industry](#) by the International Association of Oil and Gas Producers (IPIECA).

15.1. Biophysical determinants of health

With regard to the biophysical determinants of health, the Impact Statement must:

- provide an assessment of the potential adverse and positive effects on human health taking into consideration, but not limited to, potential changes in:
 - air quality;
 - noise exposure and the effects of vibrations;
 - light levels;
 - current and future availability and quality of country foods (traditional foods)⁹;
 - current and future availability and quality of water for drinking, recreational and cultural uses);
- provide an assessment of the carcinogenicity of diesel exhaust gases when diesel engines are a source of air pollutant emissions for the project. In characterizing the carcinogenic risk of project-related diesel exhaust gases, the proponent has two options:
 - carry out a quantitative risk assessment using the associated unit risk value published by the *Environmental Protection Agency* of California that, despite not being expressly recognized in Canada, can provide an overview of the potential impacts that a particular project may have on the risks associated with diesel emissions; or
 - provide a qualitative risk assessment of the carcinogenic risk of diesel exhaust gases related to the project, which includes three different elements to ensure transparency:
 - identification of the main sources of diesel emissions for the project and acknowledgement of the relative importance of diesel emissions as a source of air pollution for the project;
 - acknowledgement that diesel emissions have been labelled a human carcinogen by international authorities such as Health Canada, WHO's International Agency for Research on Cancer, the U.S. *Environmental Protection Agency* and the California *Environmental Protection Agency*; and
 - why a quantitative assessment of the carcinogenic risk of diesel emissions for the project is not being done.
- determine the anticipated effects of the project on the quality and quantity of groundwater or surface water used for domestic purposes based on the strictest guideline values for the following criteria: [Guidelines for Canadian Drinking Water Quality \(GCDWQ\)](#), [Quebec Regulation respecting the quality](#)

⁹ Refer to section 8 "Baseline conditions – Human health" for a definition of country foods, as well as the document [Guidance for Evaluating Human Health Impacts in Environmental Assessments: Country Foods](#).

of drinking water, Ontario Drinking Water Quality Standards (ODWQS), or Ontario Soil, Ground Water and Sediment Standards (OSGWSS);

- describe how the contaminants (e.g. arsenic, cadmium, lead, mercury) related to the project and that can potentially end up in the water, air or soil can be absorbed in country foods (i.e. foods that are trapped, fished, hunted, harvested or grown for subsistence, cultural or medicinal purposes);
- identify all the potential routes of exposure to contaminants, taking into account, among other things, potential infiltration of carbon monoxide into inhabited areas during blasting activities¹⁰;
- provide a detailed justification for every contaminant of potential concern (COPC¹¹) or exposure route that would be excluded and/or eliminated from the assessment of the human health risks;
- provide the rationale if a determination is made that an assessment of the potential for contamination of country foods (traditional foods or other exposure pathways, such as inhalation) is not required or if some contaminants are excluded from the assessment;
- conduct a problem formulation exercise to determine whether a more thorough HHRA is required. The proponent must provide a rationale if the problem formulation indicates that a more thorough HHRA is not warranted.
 - Problem formulation is the stage of the HHRA that consists of identifying the main factors to consider. It briefly addresses the following factors:
 - identification of the boundaries of the study;
 - identification of the current and future COPCs;
 - identification of current and future human receptors;
 - identification of current and future exposure pathways;
 - development of the conceptual site model illustrating the connections existing between the COPC, the receptors and the exposure routes.
 - HHRA: assessment of the effects on the health of persons exposed to biophysical stressors, particularly increased concentrations of chemical substances present in the environment and linked to various phases of a project (construction, operation, decommissioning and post-abandonment, as the case may be);

¹⁰ Refer to document [Les intoxications au monoxyde de carbone et les travaux de sautage. Guide de pratiques préventives](#) (French only)

¹¹ COPC: Any chemical substance for which the concentration in an environmental medium is likely to be high due to the project's activities may first be considered as a COPC. However, if it is established that the sum of the modelled concentrations and the background concentrations is below the guidelines, standards or criteria - based on health protection - for the affected area, the statement of the problem stage of the risk assessment may conclude that it is unnecessary to treat this chemical substance as a COPC in a quantitative risk assessment.

- if a HHRA is conducted, it must examine all exposure pathways for COPC to adequately characterize potential biophysical risks to human health. A multimedia HHRA may need to be considered and conducted for any COPC with an identified risk and multiple pathways;
- describe and quantify, if possible, specific thresholds used for the health effects assessment and indicate if different thresholds have been considered for vulnerable populations, including thresholds based on sex and age. Provide a justification if any applicable threshold was not used;
- document and take into account tolerance thresholds for potential adverse effects on health identified by Indigenous peoples;
- in situations where project-related air, water, noise or light emissions meet local, provincial, territorial or federal guidelines, and yet public concerns were raised regarding human health effects, provide a description of the public concerns and how they were or are to be addressed;
- with regard to potential effects on food security:
 - describe changes in terms of availability, use, consumption and quality of country foods (traditional foods), and the potential effects related to these changes on physical and mental health of communities, including for Indigenous peoples¹²;
 - identify possibilities of avoidance of certain country food sources or drinking or recreational water sources by the Indigenous peoples due to the perception of contamination;
- describe any project-related changes that could result in a positive health effect (e.g. remediation projects); and
- use best practices in health risk assessment methods (see Health Canada, 2019. [Guidance for Assessing Human Health Impacts in Environmental Assessments: Human Health Risk Assessment](#)).

15.2. Social determinants of health

With regard to the determinants of health other than biophysical ones, the Impact Statement must:

- consider the negative and positive health effects (i.e. general well-being) arising from the effects on social and economic VCs, and their respective indicators, reflecting the input of the affected communities;
- identify and describe the social determinants of health that may be relevant to the project, for example:
 - housing availability, home value, housing affordability and home ownership;
 - demographic information on the region, including available the population's descriptive statistics (age, ethnicity, sex and gender, language);
 - access to health and social services;
 - access to green spaces, parks and recreational facilities;

¹² Refer to: Health Canada, [Eating Well with Canada's Food Guide - First Nations, Inuit and Métis](#)



- community cohesion;
- average income and wage inequality;
- education level;
- factors supporting mental health and community well-being (including perceived stress, feelings of isolation, of remoteness, of concern for future generations, and other factors that have been identified in the wake of youth suicide in rural and remote communities); and
- safety of Indigenous women.
- identify any emotional or social stress factor that may result from the project, particularly:
 - concerns regarding public safety raised by the construction or by the risk of accidents or malfunctions related to project operations; and
 - disturbance of normal daily activities;
- describe the effects that temporary work camps have on the safety of women and girls;
- describe potential effects on access to social and health services, including the increased use of health services and related social services in the relevant communities;
- describe any potential project-related effects on the community health profile (e.g. changes in existing community activities);
- indicate the potential health effects, short-term or long-term, resulting from changes on community cohesion and perception of well-being during the construction phase, and determine whether those effects would change again during the operation phase;
- describe how potential avoidance of land near project components by Indigenous peoples due to perceived changes in environmental quality and tranquillity was considered in assessing potential effects on the diet and health of Indigenous peoples;
- document and take into account tolerance thresholds for potential adverse effects identified by Indigenous peoples;
- describe how community and Indigenous knowledge was used in assessing the human health effects;
- apply GBA+ across all health effects, including effects on access to and use of social and health services, by examining how potential changes to these determinants could have different effects for diverse subgroups, including for Indigenous peoples and relevant community subgroups (e.g. women, youth, elders), and ensuring that different needs, particularly those related to health, are considered; and
- describe any project-related change that could lead to positive health effects (e.g. resulting from improved economic opportunities or increased access to services).

The proponent should refer to the [*Social Impact Assessment in the Environmental Sector: health network support guide*](#) by the Institut national de santé publique du Québec (2014).

16. Effects on valued components – Social conditions

Within the context of the predicted changes to the biophysical environment, health and economic conditions resulting from the project, the proponent must assess the effects of the project on social conditions. Interconnections between social VCs and other VCs and interactions between effects must be described.

The VCs that require assessment are listed below, including select considerations and indicators to be included in the analysis. If, after engaging with communities and conducting further analysis, the proponent determines that the information and VCs listed below could be more meaningfully organized and presented in an alternate way, it may do so and provide an explanation and rationale for these changes.

The proponent must describe how community and Indigenous knowledge was used to collect baseline data and assess social effects and how they differ for diverse subgroups, as observed by these groups, where possible. In assessing effects to VCs listed below, the analysis should discuss circumstances in a community where diverse subgroups, because of their particular circumstances, could experience adverse effects from the project more severely than others, or be excluded from potential benefits.

The analysis should describe the goals of local or regional land use plans or local or regional development plans and the extent to which the project is aligned with such plans to avoid or enhance social effects. For the VCs listed below, the effects assessment should explore and discuss opportunities by which benefits to local communities can be enhanced.

16.1. Services and infrastructure

The Impact Statement must:

- describe the predicted effects to the local and regional infrastructure facilities and services in the study area, including adverse and positive effects to:
 - housing (e.g. availability, affordability, suitability);
 - road infrastructure and traffic safety;
 - railways;
 - pipelines, water mains and sewer lines;
 - power lines;
 - utilities;
 - access to green spaces, parks and recreation facilities;
 - waste disposal;
 - police and firefighters;
 - educational services, facilities and daycare;

- ambulance and health care services, including elder care and services;
- mental health and social services; and
- any other potentially affected infrastructure facilities and services.
- take into account potential effects arising from a higher risk of accidents for each phase of the project, e.g. a higher risk of impact on the road system and emergency services during the construction phase due to an increased use of roads; and
- describe any need for new or expanded services, facilities or infrastructure, arising out of project-related effects.

16.2. Use of land and resources

The Impact Statement must:

- describe the possible interactions of the project with local and regional activities for use of land and resources, including the positive or adverse effects on:
 - transportation and utility corridors;
 - residential land use;
 - forestry operations;
 - commercial outfitters;
 - agriculture, including the anticipated effects on livestock health and productivity;
 - water supplies and water lots, as well as water sources and intakes for agricultural operations, industries, residents and municipalities;
 - other land uses;
- describe the potential effects on recreation and tourist activities (e.g. hunting, fishing, gathering, hiking wildlife and landscape viewing) by the communities, including the effects on:
 - access to resources;
 - the quantity and quality of resources;
 - access to parks and other recreation and conservation areas;
 - the overall experience acquired in the context of recreational and tourist activities, including the effects of noise and artificial light;
- describe potential effects arising from the changes made to the visual and acoustic landscapes, including to visual and acoustic landscapes identified by Indigenous peoples;
- describe the land use losses associated with the security buffer zones applicable to the project; and
- determine the anticipated effects of the project on the quality and quantity of groundwater or surface water used for recreational purposes.

16.3. Navigation

The Impact Statement must:

- describe navigable waterways that could be impacted by the project, and specify the proposed crossing method;
- describe ancillary project components that will be constructed in, on, under, over, through or across navigable waterways to support the project (e.g. temporary or permanent bridges,), and specify the proposed crossing method;
- describe potentially affected waterway users and describe consultation with waterway users and Indigenous peoples regarding navigational use, issues raised and how issues were addressed; and
- describe project effects to navigation and navigation safety.

16.4. Community well-being

The Impact Statement must:

- assess potential adverse and positive effects, at the community level, of changes to social conditions including, such as those considered for the analysis of the social determinants of health in section 15.2;
- describe, at the community level, the expected interactions between the project's construction, operation and maintenance workforce and local communities, businesses and residents;
- describe potential effects related to in- and out-migration, including on social and cultural make-up of affected communities and changes in populations;
- identify whether social divisions might be intensified as a result of the project;
- evaluate potential social effects associated with the increase in disposable income, including potential effects on cost of living, adverse and positive lifestyle changes and distribution of benefits among diverse subgroups;
- evaluate effects on access, ownership and use of resources (e.g. land tenure, minerals, food, water, social infrastructure);
- describe any anticipated effects on language;
- describe how changes to viewscales, including nocturnal viewscales, as a result of the project could result in effects on community well-being;
- consider the potential for stresses on community, family and household cohesion, alcohol and substance abuse, or illegal or other potentially disruptive activities, including related to violence;
- describe potential effects related to greater propagation of sexually transmitted infections and gender-based violence (e.g. harassment or human trafficking);
- identify and consider the barriers that impede taking advantage of the positive effects on social conditions and how they are accentuated across diverse subgroups; and

- document the consultation undertaken with local, regional and Indigenous communities, as appropriate.

The proponent must apply GBA+ within the information related to community well-being and document how potential effects are different across diverse subgroups, including among Indigenous peoples and other relevant subgroups (e.g. women, youth, elders). Ethical guidelines and relevant cultural protocols governing research, data collection and confidentiality must be adhered to. This is particularly important in the case of information gathered and studies conducted with vulnerable subgroups (e.g. analysis of gender-based violence).

16.5. Physical and cultural heritage, structures, sites or things of historical, archaeological, paleontological or architectural importance

The Impact Statement must:

- evaluate the potential effects of changes to heritage and to structures, sites, or things of historical, archaeological, paleontological or architectural significance to communities, including:
 - loss or destruction of physical and cultural heritage;
 - change in access to physical and cultural heritage;
 - changes to the cultural value, spirituality, or importance accorded to physical and cultural heritage;
 - changes to places, objects or things that are sacred, ceremonial or culturally significant, languages, histories and traditions;
 - changes in visual aesthetics during the life of the project and after abandonment or decommissioning of the project;
- consider potential effects on physical and cultural heritage when assessing effects on social and economic conditions;
- provide copies of correspondence with provincial or territorial authorities responsible for heritage resources containing their comments on the heritage resource assessment and proposed mitigation measures; and
- describe the results of consultation and engagement activities with communities having heritage resource concerns in the project area and indicate the involvement of community members in related studies, if applicable.

With respect to archaeological and historical resources:

- in the event that project activities may disturb the soil, on the surface or underground, is carried out on Crown lands, conduct an archaeological potential study for the Crown territory affected. Based on the recommendations of this study, field work (visual inspection without snow cover, archaeological inventory, or other) could be necessary. Depending on the findings, this expertise could lead to

mitigation measures related to the findings obtained, which can take the form, for example, of intensive digs at a given site or a proposal for modification of the anticipated route;

- on lands under Quebec provincial jurisdiction, project activities that could disturb the soil on the surface or undergrounds should comply with the Quebec *Cultural Heritage Act* and the *Archaeological Research Regulation*; and
- on lands under Ontario provincial jurisdiction, project activities that could disturb the soil on the surface or underground should comply with the *Ontario Heritage Act* and the [Standards and Guidelines for Conservation of Provincial Heritage Properties](#).

Changes to heritage, structures, sites or things of historical, archaeological, paleontological or architectural significance specific to Indigenous peoples can be found in section 18.1.1.

17. Effects on valued components – Economic conditions

The proponent must assess the effects of the project on the economic VCs, stemming from the predicted project changes to the biophysical environment, health and social conditions. All interconnections between these economic VCs and other VCs and interactions between effects must be described.

The proponent must describe how community and Indigenous knowledge was used to collect baseline data and assess for diverse subgroups, where possible, the way in which economic effects would be different for these subgroups. The Impact Statement must apply GBA+ to all effects and document how the potential effects or the changes in the economic conditions could be different for specific subgroups, including Indigenous peoples or other relevant subgroups (e.g. women, youth, elders).

As much as possible, the data must be sub-divided by sex, age and ethnicity and presented distinctly for each Indigenous people and all subgroups forming their communities.

During the assessment of the effects on the VCs listed below, the analysis must address the circumstances, in a community, in which diverse subgroups could, due to their special situation, suffer more severe adverse effects of the project than others, or not benefit from future economic benefits. The Impact Statement must also take into account the tolerance thresholds regarding the potential negative effects that Indigenous peoples have identified.

The Impact Statement must describe potential positive and adverse effects to the local, regional and provincial economies, including, if applicable, whether and how local benefits can be maximized. The assessment of economic effects should take into consideration the temporal scale for construction, operation and beyond, to assess the potential for, and avoidance of, boom-and-bust cycles potentially associated with the project.

Other requirements regarding training, employment, contracting and procurement and economics are discussed in section 19.12 “Economic components”, with respect to mitigation and enhancement measures.

17.1. Training

The Impact Statement must describe, if applicable, the training requirements related to the project needs and the potential economic effects that these requirements could cause.

17.2. Employment

The Impact Statement must:

- describe the potential changes in employment including the following aspects:
 - an estimate of the number of workers affected at each phase of the project;
 - a description of the employment likely to be in demand due to the project and the project requirements in terms of skilled and unskilled labour;
 - an estimate of the availability of local workers to occupy these jobs;
 - an analysis of the potential for worker possibility of labour shortages in certain sectors within of the communities to be affected by as a result of after the project;
 - if applicable, a description of the plans and the justification for hiring of temporary workers to make up for the shortage of labour and skills;
- a description of the situations where the project may directly or indirectly create economic difficulties or the displacement of workers;
- provide an estimate of direct, indirect or induced income or wages, and the allocation of this income or wages, resulting from the project's expenditures during construction, operation and decommissioning;
- describe the potential positive effects in terms of long term careers and quality employment (e.g. fulltime vs precarious part time, temporary or permanent, skilled or unskilled) for the life of the project;
- analyze the potential for increasing employment for women and other subgroups and local workers more generally;
- provide an estimate of the anticipated levels of economic participation of Indigenous peoples in the project in relation to the project's total requirements (e.g. number of workers);
- describe, if applicable, the co-development processes with Indigenous peoples to ensure common development and management of programs for Indigenous employment; and
- describe the project's diversity and inclusion workforce plans, policies and practices including gender-neutral signage and appropriate safety equipment and apparel.

17.3. Contracting and procurement

The Impact Statement must:

- describe the products and services that would be required for the project, including those that the proponent anticipates concluding procurement contracts;

- provide construction procurement and contract values;
- describe how the proponent anticipates it will attribute construction contracts and procurement of products and services;
- evaluate the ability of local businesses to compete for project-related contracting or to establish a partnership with the proponent;
- summarize business commitments made, if the proponent has prepared an economic benefits plan or has entered into specific cooperation agreements with communities or Indigenous peoples;
- provide an estimate of the anticipated levels of local and regional economic participation in the project in comparison to the total project requirements (e.g., total dollar value of contracts), as well as for the Indigenous peoples; and
- describe situations when the project may directly or indirectly create economic hardships or the displacement of businesses.

17.4. Economics

The Impact Statement must:

- include an estimate and description of direct, indirect and induced economic effects of the project in the short and long term;
- document the sources and methodologies used for developing multipliers and estimates and, where a generic multiplier may not accurately reflect the specific situation of the project, provide evidence of specific economic activity that will result from the project going ahead;
- describe the potential effects of changes to economic conditions in affected communities, including Indigenous communities, for example, to:
 - forestry and logging operations, including the recovery of wood cut during the construction phase;
 - fishing, hunting, and trapping;
 - commercial outfitters;
 - commercial recreation and tourism; and
 - agriculture, including predicted effects to livestock health and productivity.
- consider the indirect effects on the economy resulting from changes in land use (e.g. effects on farmers from the potentially increased use of recreational vehicles, and restrictions related to the presence of the pipeline);
- describe the potential effects on economies based on trade, namely for Indigenous peoples;
- describe the potential effects of the project on the availability and quality of land and the short-term and long-term disturbance of the related sectors of activity;
- describe the potential effects of the project on the quality and quantity of groundwater or surface water used for commercial purposes;

- provide a quantitative evaluation of effects on local, regional, provincial, territorial, federal government or Indigenous peoples revenues from tax levies, royalties, revenue sharing and other means for each phase of the project;
- discuss how the project would affect the gross domestic product at the federal and provincial levels;
- evaluate the net economic benefits to the Canadian economy as a whole, which requires a detailed forecast of annual cash flows for the life of the project, including a sensitivity analysis showing the impact of changes in the discount rate, prices, capital and operating costs, or other significant parameters;
- estimate the potential effects of the project on the traditional economy, including the potential loss of related jobs; and
- provide an analysis of potential changes to property values and to the cost of living as a result of the project.

18. Indigenous peoples

Proponents must engage with Indigenous peoples, in order to identify and understand the potential impacts of their projects on Indigenous peoples, and to incorporate Indigenous knowledge into the impact assessment. Engagement with Indigenous people is required to inform the impact assessment and identify measures to avoid or minimize potential impacts on Indigenous peoples from the project. This engagement may also identify potential positive outcomes, including measures that could improve the underlying baseline conditions that support the exercise of rights. Ideally, the project will be designed not only in such a way as to minimize its negative effects, but also to maximize its positive impact on the quality of life of Indigenous peoples.

The engagement with Indigenous peoples should involve ongoing information sharing and collaboration between the proponent and the Indigenous people to help validate the assessment findings. The results of any engagement should be presented in the Impact Statement, and, as best as possible should reflect the perspective of the Indigenous peoples involved as described in section 5 “Description of engagement with Indigenous peoples”. In cases where a specific study addressing elements relevant to the impact assessment of the project has been prepared by an Indigenous people, the proponent must incorporate it into the Impact Statement and explain how it was taken into account. In addition, the proponent must append the full studies, as they were presented by each Indigenous people, except in cases where the information could be confidential in nature.

The proponent must provide an opportunity for Indigenous peoples to review the information prior to submission of the Impact Statement. The Impact Statement must indicate where input from Indigenous peoples has been incorporated, including Indigenous knowledge. To the extent possible, information must be presented separately for each Indigenous people involved in the assessment, and include contextual information about the members of the Indigenous people, by relevant subgroups (e.g. women, men, elders, youth).



Where Indigenous peoples do not wish to participate, the proponent is encouraged to continue sharing information and analyses with Indigenous peoples pertaining to potential effects of the project, to document its efforts in that respect, and to use available public sources of information to support the assessment.

18.1. Effects on Indigenous peoples

The Impact Statement must provide information on how the Project may affect Indigenous peoples, as informed by the Indigenous peoples involved. For instance, it is important to document and use the tolerance thresholds that have been identified to describe potential effects. Information on measures proposed to mitigate adverse effects must also be provided, including the perspectives of Indigenous peoples on potential mitigation measures. The proponent must apply Agency guidance on engaging with Indigenous peoples and appropriate methodologies for assessing effects and impacts on Indigenous peoples and their rights.

The assessment of potential effects must include both adverse and positive effects to the current use of land and resources for traditional purposes, to physical and cultural heritage, to structures, sites or things of historical, archaeological, paleontological or architectural significance, and to environmental, health, social and economic conditions of Indigenous peoples affected by the project.

18.1.1. Physical and cultural heritage, and structures, sites or things of significance

The Impact Statement must:

- assess potential effects to physical and cultural heritage and to structures, sites or things of historical, archaeological, paleontological or architectural significance for Indigenous peoples, including:
 - the loss or destruction of physical and cultural heritage;
 - changes to access to the physical and cultural heritage;
 - changes to the cultural value, spirituality or importance attached to the physical and cultural heritage;
 - changes to sacred, ceremonial or culturally important places, objects or things, including languages, stories and traditions;
 - changes to visual aesthetics over the life of the project and after abandonment or decommissioning of the project.
- take into account potential effects on physical and cultural heritage when assessing the effects on social and economic conditions;
- provide copies of correspondence with provincial or territorial authorities responsible for heritage resources with comments on any heritage resource assessment and proposed mitigation measures;
- describe the outcomes of engagement and consultation activities with Indigenous communities with concerns about heritage resources in the project area and indicate the participation of the members of these communities in the related studies, if applicable;

- describe how Indigenous knowledge informed studies, including the identification of the sites to assess and include studies conducted by Indigenous peoples, if any; and
- consider natural and cultural heritage as a multidimensional concept which is not limited to particular sites or objects and which can also include components of the environment identified by Indigenous peoples as having heritage value.

18.1.2. Current use of lands and resources for traditional purposes

The Impact Statement must:

- assess the potential effects on current use of lands and resources for traditional purposes, including to:
 - current and future availability and quality of country foods (traditional foods);
 - quality and quantity of resources available for harvesting, other than for subsistence (e.g. species of cultural importance, traditional and medicinal plants);
 - experiences of being on the land (e.g. the changes in air quality, noise exposure, effects of vibrations from blasting or other activities, increase in artificial light at permanent and temporary sites, fragmentation of the territory);
 - the use of travel routes, navigable waterways and water bodies;
 - sites of interest to communities including for commercial and non-commercial fishing, hunting, trapping and gathering sites, as well as on cultural and ceremonial activities and practices that could be taking place on those sites; and
 - access to the territory and to the distribution and availability of harvested wildlife (e.g. wildlife avoidance);
- describe potential effects on the transmission of traditional knowledge linked to activities potentially affected by the project;
- describe all reasonable alternatives considered that would avoid impacts on current use of lands and resources for traditional purposes considered during project development;
- take into account expectations pertaining to the preservation of landscapes, including nighttime landscapes and, if applicable, regulatory requirements in place concerning light pollution; and
- describe how Indigenous peoples who participated in the gathering of traditional use information took part in the impact assessment and in the development of proposed mitigation measures, including undertaking their own assessment of effects. Include all Indigenous comments on potential effect to current use of lands and resources for traditional purposes.

18.1.3. Health, social and economic conditions

The Impact Statement must meet the requirements set out in sections 15, 16, and 17 above with regard to the effects on health, social and economic conditions, which must take into account Indigenous peoples and GBA+ specific to Indigenous peoples.



The assessment of these effects on Indigenous peoples must describe and take into account interactions with the effects on physical and cultural heritage, on structures, sites or things of significance, and on the current use of lands and resources for traditional purposes. For example, an effect on a traditional food may have consequences for the practice of traditional activities, and could lead to an effect on the cost of living, food security, and mental health at the community level or on vulnerable subgroups.

18.2. Impacts on the rights or interests of Indigenous peoples

The Impact Statement must describe the level of engagement with Indigenous peoples regarding potential impacts of the project on the exercise of rights, and where possible, the project's potential interference with the exercise of rights. It is preferable that Indigenous peoples have all the information about the project and its potential effects on hand to be able to assess the potential impacts of the project on their rights and interests. The proponent is therefore encouraged to share VC studies with Indigenous peoples prior to assessing the impact on their rights or interests. In the absence of this information, the proponent must document the approach taken to support Indigenous peoples in order to identify the potential impacts of the project on their rights and interests, including the hypotheses put forward on the potential effects.

Where an Indigenous people has not provided this information to the proponent, or both parties agree that it is better to provide information related to the impact on the exercise of rights directly to the Agency or the Review Panel, the proponent should describe the rationale for the approach taken. The proponent is encouraged to discuss with Indigenous peoples their views on how best to reflect the assessment of impacts on rights in their Impact Statement. This may include supporting Indigenous-led studies that are to be provided publicly and to the Government of Canada.

The proponent and Indigenous peoples should document and consider the following factors, as relevant:

- how the project may contribute cumulatively to any existing impacts on the exercise of rights, as identified by the Indigenous people;
- the interference of the project on the quality and quantity of resources available for the exercise of rights;
- how the project affects the ability to travel freely in the territory;
- the interference of the project on the access to areas important to the exercise of rights;
- the interference of the project on the experience associated with the exercise of rights;
- the interference of the project on Indigenous traditions, laws and governance
- how the project will affect the planning, management or stewardship of traditional lands and resources by Indigenous peoples;
- how the project will affect the ability of Indigenous peoples to derive future economic benefits from the land or water or to maintain an ongoing relationship with the land or water;
- the way that the project is aligned with the values, political direction and/or objectives of Indigenous peoples in the fight against climate change;



- the manner in which the project and its impacts weaken or strengthen the authority of Indigenous peoples on their territory;
- whether Indigenous peoples have given their free, prior and informed consent to the proponent regarding the information contained in the Impact Statement (from the perspective of each Indigenous people), as well as their consent to the project; and
- how the project affects all other components of significance identified by Indigenous peoples.

Proponents must work together with Indigenous peoples to find mutually agreeable solutions to concerns raised about the project, especially for those concerns raised by Indigenous peoples about impacts on the exercise of their rights.

The Impact Statement must:

- document the project's potential impacts on the exercise or practice of the rights of Indigenous peoples or the rights arising from treaties in the project area, as expressed by potentially impacted Indigenous peoples;
- describe the impact on the rights of Indigenous peoples, taking into account the concept of the link between resources, access and experience.
- describe any measures identified in an attempt to avoid, minimize, offset or otherwise address potential adverse impacts of the project on the rights of Indigenous peoples, and identify if these are measures for which the proponent or other parties would be responsible;
- describe if and how these measures will be integrated into the project design, if applicable;
- with respect to mitigation measures proposed by the proponent, the Impact Statement should include perspectives of the potentially impacted Indigenous peoples, on the effectiveness of particular mitigation measures on such impacts; and
- document the views of potentially affected Indigenous peoples regarding the impact that possible connections could have on their rights and interests.

Where no mitigation measures are proposed or mitigation is not possible, the Impact Statement must describe the potential adverse impacts on the rights of Indigenous peoples, as identified by the Indigenous peoples.

The proponent must consult the following Agency guidance documents on this topic: the [*Policy Context: Assessment of Potential Impacts on the Rights of Indigenous Peoples*](#) and the [*Interim Guidance on Assessing Potential Impacts on the Rights of Indigenous Peoples*](#).

Mitigation measures are further discussed in section 19 "Mitigation and enhancement measures".

19. Mitigation and enhancement measures

Every impact assessment conducted under the IAA must identify measures that are technically and economically feasible that would mitigate all of the project's adverse environmental, health, social and economic effects. Conversely, the proponent can identify enhancement measures to increase positive effects. Mitigation and enhancement measures that are proposed are discussed during the review of the Impact Statement and may be modified as a result of the review. Mitigation and enhancement measures may be considered for inclusion as conditions in the decision statement.

Mitigation measures are technically and economically feasible measures to eliminate, reduce, control or offset the adverse effects of a designated project, and include restitution for any damage caused by those effects through replacement, restoration or compensation. The "hierarchy of mitigation measures" means the descending sequence of the following three options:

- **Eliminate:** refers to the elimination of effects, such as by changing the location or design of the project. It can also be referred to as "avoidance" of effects.
- **Reduce and control:** aims to reduce effects to the extent possible, for example, by modifying the most adversely impactful project activities or components or by taking measures specific to the potential effects. There may still be residual effects where measures are not sufficient to eliminate the effects, or where their absolute effectiveness is uncertain. Effects may also be "minimized" when it is not possible to "avoid" them.
- **Offset:** aimed at offsetting residual effects following consideration of elimination and reduction measures, through measures referred to as "compensation" or "restitution". For example, where an effect on fish habitat persists, it may be possible to offset through the creation of new habitat (replacement) or to propose measures to restore degraded habitat conditions. These include measures referred to as replacement, restoration or (financial) compensation.

As a first step, the proponent is encouraged to use an approach based on the avoidance and reduction of the adverse effects at the source, namely consider modifying the design or changing the location of certain project components.

Enhancement measures for positive effects are not necessarily required to mitigate negative effects, but are measures that may be developed to make use of opportunities presented by the project to contribute to, for example, local and regional training efforts, investment in infrastructure and services, projects to rehabilitate degraded environments, etc.

Measures are to be specific, achievable, measurable and verifiable, and described in a manner that avoids ambiguity in intent, interpretation and implementation.

The Impact Statement must:

- describe the standard mitigation practices, policies and commitments that constitute proven technically and economically feasible mitigation measures and that are to be applied as part of standard practice regardless of location as well as any new or innovative mitigation measures being proposed;

- if a regional assessment is in progress or completed in the project area, the proponent should use the information generated by this process to clarify the possible mitigation or enhancement measures.
- describe mitigation measures that are specific to each environmental, health, social or economic effect identified. Mitigation measures are to be written as specific commitments that clearly describe how the proponent intends to implement them and the outcome these mitigation measures are designed to address. The grounds, including examples of efficiency based on other projects or similar situations, that make it possible to judge that the proposed measures reduce or eliminate the anticipated adverse effects must be presented;
- specify the interventions, the work, the ecological footprint reduction techniques, the existing best technology, the best environmental practices, the corrective actions and any addition anticipated in the various stages of the project with a view to eliminating or mitigating the adverse effects of the project (e.g. minimize the width of the right-of-way, opt for crossing by directional drilling when possible, minimize the duration of the work in water, etc.);
- describe any environmental protection plan being prepared for the project and, if applicable, the environmental management system through which plans will be delivered. The plan(s) must provide an overall perspective on how potentially adverse effects would be minimized and managed over time;
- discuss the mechanisms the proponent would use to require its contractors and sub-contractors to comply with these commitments and policies and with auditing and enforcement programs;
- describe the approach that would be taken if a mitigation measure is no longer feasible while the project is carried out;
- describe how, throughout the project's duration, the lessons learned through follow-up programs will be used to continually improve mitigation measures (adaptive management);
- identify other technically and economically feasible mitigation measures that were considered but are not proposed for implementation, and explain why they were rejected. Justify any trade-offs between cost savings and effectiveness of the various forms of mitigation measures;
- assess the potentially adverse effects associated with the mitigation method itself (e.g. potential failures related to fish habitat rehabilitation and resulting effects);
- include a mitigation and decommissioning plan for the access roads and the other temporary components of the project;
- explain how mitigation and enhancement measures were developed with communities and Indigenous peoples, as well as federal, provincial and municipal authorities, as applicable;
- provide an assessment of the likely effectiveness of the proposed technically and economically feasible mitigation measures and describe the relevant uncertainty in the measure's effectiveness. The reasons for determining if the mitigation measure reduces the extent to which the effects are significant must be made explicit;
- describe the use and application of best available technology and best environmental practice in identifying, assessing and implementing mitigation measures;
- identify the party responsible for the implementation of mitigation measures and the system of accountability; and

- provide a list and produce a summary of the mitigation measures along the pipeline route in a commitment table, in a format that allows all participants to identify and understand the timing and place of implementation of the measures. This table should be updated regularly during the assessment process so that it remains current.

Where mitigation measures are proposed to be implemented for which there is little experience or for which there is some question as to their effectiveness, the potential risks and effects should those measures not be effective must be clearly and concisely described. In addition, the Impact Statement must identify the extent to which technological innovations may help mitigate effects. Where possible, the Impact Statement must provide detailed information on the nature of these measures, their implementation, management and related requirements of the follow-up program.

In addition to the general factors above, the following subsections present additional requirements specific to individual VCs. The proponent may wish to propose measures that differ from the following requirements and recommendations. In which case, the proponent must provide a rationale. For example, the proponent could propose measures better suited to the types of anticipated effects, which would not have been anticipated in developing the following lists.

19.1. Atmospheric, acoustic and visual environment

The Impact Statement must describe the mitigation measures for the potential effects on the atmospheric, acoustic and visual environment, including:

- provide a description of all the methods and practices (e.g. control equipment, heat or gas recovery system) to be deployed to reduce and control emissions.
- provide a noise management plan, including identification of the noise sources, common noise mitigation measures, the performance efficiency of the noise control devices, the best practices programs and the continuous improvement programs, and establish the need for follow-up monitoring for the purposes of validation of the model or due to any concern raised by participants. The noise management plans must also consider the following factors:
 - notification and scheduling of maintenance activities, such as blowdowns and equipment venting during daylight hours;
 - notification of nearby residences and local authorities regarding the noise prevention and management plans and procedures;
- provide a lighting management plan, including the planning and management of lighting and of the ambient light for every activity site and the consideration of measures for the reduction of excessive light during construction and operation. Measures to reduce excessive light must be considered and applied during the construction and operation, while maintaining safe lighting levels, particularly in the choice of fixtures, lighting level, their direction and height, and their limited period of use.
 - Consider the following options of measures for lighting management:
 - avoid or minimize the use of artificial light;

- select low-intensity lighting;
 - use lighting fixtures that limit or concentrate the lighting to targeted areas and avoid light spilling out of the spaces to be illuminated;
 - limit the projection of light toward the sky by using fixtures that produce dark, uniform lighting that meets actual lighting needs;
 - avoid the emission of light at more than 90 degrees; and
 - avoid lights that emit blue/green/white/UV wavelengths.
- Consider measures for temporary activity sites (work camp, work area, storage area, workers' camps etc.) as well as for permanent activity sites (administration buildings, compressor stations, metering station, control centre and other related equipment);
- develop and implement strategies compliant with the commitment of the CCME regarding prevention of pollution;
- ensure that the best available economically feasible technologies to reduce airborne particulate matter concentrations and other contaminants are implemented. If the best available technologies are not included in the design of the project, the proponent must provide a justification of the technologies selected;
- implement measures to reduce emissions and formation of dust and particulate matter from land development and construction operations, including those coming from machinery and vehicles. The mitigation measures should include design factors specific to the site, operating practices, precise technologies, and the products and equipment that will be used to prevent or control emissions;
- apply various methods to reduce dust emissions, such as imposing speed limits, using dust removals, using wet spraying on material piles, building gravel roads using a material with low silt content and, where applicable, deploying a particulate matter monitoring program outside the boundaries of the project site;
- adopt the best management practices, such as those presented in the document [*Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities*](#);
- produce and apply a precise and rigorous management plan for dust emissions from non-asphalted roads for all phases of the project. The plan must describe the emission sources and the related control methods and mitigation measures to be applied;
- reduce road and off-road vehicle engine emissions by adopting technological strategies (e.g. use of exhaust gas post-treatment devices, use of replacement fuels) and operational strategies (e.g. establish limits for idling);
- for operation of the turbines in the compression stations, consider the CCME's National Emission Guidelines for Stationary Combustion Turbines, the [*Environmental Code of Practice for the Measurement and Control of VOC Emissions from Equipment Leaks*](#) including the details of the leak detection and repair program deployed if fugitive VOC emissions constitute a concern for the project for above-ground storage tanks, as well as the CCME's Environmental Guidelines for the Reduction of Volatile Organic Compounds. The CCME's national guidelines establish voluntary targets that have been developed in collaboration with the provincial, territorial and federal authorities to induce



proponents of projects to operate combustion turbine facilities in instances so that they limit atmospheric emissions.

19.2. Groundwater and surface water

The Impact Statement must describe the mitigation measures for the potential effects on groundwater and surface water, including:

- describe the mitigation measures for the possible effects on the quantity and quality of surface water, groundwater and well water, including the rationale that explains the effectiveness of proposed measures.
- provide any water management plan applicable to waterbodies and watercourses likely to be affected by any phase of the project;
- describe and justify water use for works, particularly for works in sensitive environments including eskers and aquifers associated with drinking water consumption (e.g. hydrostatic tests), and the measures that will be taken to eliminate or reduce the adverse effects, including the supply and discharge of water, and eventual exchanges between watersheds that would lead to the introduction of an undesirable biota.
 - If the final details of the hydrostatic tests have not been confirmed yet, the proponent nonetheless must specify the expected requirements, the options available and the criteria it intends to apply to assure protection of water resources.
 - The proponent may also indicate other water sources (e.g. recycled water or brine) for the project and consider the possibility of reusing the water from the tests to run checks in the different pipeline sections;
- describe any groundwater and surface water monitoring programs, including the selection and location of sampling points, the parameters that will be measured, the duration and frequency of monitoring, the sampling protocol and analysis protocol and the quality assurance and quality control measures. Where applicable, the parameters measured should include a comparison of the measured parameters with the criteria in the [CCME Canadian Environmental Quality Guidelines](#). Include the description of the measures that will be implemented if the criteria are exceeded;
- describe any specific monitoring program planned during construction, including assessment of effects before and after construction activities in order to optimize or adapt mitigation measures at the time of their application;
- describe methods for the prevention, management and control of acid rock drainage and metal leaching during construction, operation, abandonment and decommissioning phases.

19.3. Riparian, wetland and terrestrial environments

The Impact Statement must describe the mitigation measures for the potential effects on the riparian, wetland and terrestrial environments, including:

- describe and justify the soil treatment methods to eliminate or reduce the adverse effects on the soils and materials in the root area, including recovery techniques (e.g. soil stripping including the proposed width, stump removal and other soil treatment techniques), soil separation maintenance measures, control measures for wind and water erosion, work shutdown procedures in case of wet conditions, and soil settlement prevention measures;
- describe and justify how to locate pre-existing soil or sediment contamination, the mitigation and monitoring measures that will be undertaken in this regard, and the applicable regulatory restoration measures;
- describe and justify the biosafety measures that will be employed to identify the biological risks and eliminate their propagation, such as diseases in the soil or the roots;
- describe and justify the construction methods used to cross wetlands and other sensitive terrestrial habitats, and the criteria for determination of techniques proposed for each crossing, including the locations where trenchless crossing methods will be employed;
- describe and justify the ways of avoiding or reducing the temporary or permanent adverse effects on wetlands and riparian habitats;
- describe and justify the proposed measures to mitigate bank erosion, including measures to eliminate the potential for erosion, such as bank stabilization using vegetation;
- describe the vegetation standards and controls that will be deployed during construction and operation of the project;
- relating to invasive species and vegetation management:
 - describe and justify the measures allowing identification of invasive species or other undesirable introduced species, avoid their propagation and control them during all phases of the project, including the necessity of preconstruction surveys to identify the areas with a high density of these;
 - if applicable, identify the criteria and circumstances of application of chemical, biological or mechanical control methods as well as the pertinent regulation and determine the adverse effects associated; and
 - describe the selection of plant species to be conserved and planted in order to promote vegetation communities with low natural growth;
- concerning wetlands :
 - explain how avoidance of wetlands was considered, namely by considering other locations for project components and activities;
 - explain how the effects will be reduced and controlled when applying special mitigation or by modifying the activities and components that have the potential to affect wetlands during all of the

- phases of the project, including how the available procedures, practices and technologies that are standardized, proven, or experimental and wetland-specific were considered;
- explain how mitigation measures consider the natural succession and the variability of the environment over time; and
- describe proposed compensation measures (see section 19.8 “Compensation plans”)
- describe the revegetation procedures proposed as mitigation measures, including:
 - the revegetation techniques and the locations where they would be implemented;
 - the seed mixes to use, the spreading rates and the location of the spreading. Native and indigenous species adapted to the local conditions should be used when the purpose of revegetation is to naturalize or regenerate the area;
 - the fertilizers that will be used, the spreading rates and the locations, the criteria for determining these technical features; and
 - the emergency seeding and planting plans, which include a description of the species to be replanted, the replanting locations and the criteria for determining these specifications;
- relating to the right-of-way:
 - describe and justify the width of the construction right-of-way and the permanent right-of-way, including the locations where the right-of-way will be narrowed to eliminate or reduce the adverse effects; and
 - describe and justify the necessity of temporary construction sites, and the considerations taken for minimizing the adverse effects, namely the location choice and management measures.

19.4. Fish and fish habitat

The Impact Statement must describe the mitigation measures for the potential effects on fish and fish habitat, including:

- describe the measures recommended for crossing of temporary or permanent watercourses (access and maintenance roads), including the locations where trenchless methods of crossing watercourses will be used, particularly to ensure the free circulation of fish when necessary. As applicable, non-maintenance of free passage for fish will have to be documented and justified (e.g. by showing that a barrier exists to free passage at the location of the crossing structure or near it upstream or downstream, or that the quantity and quality of habitats upstream from the structure is marginal);
- describe the measures recommended in the aquatic and riparian environment for each gas pipeline crossing method (potential or final) with or without a trench (e.g. restriction period for fish, control of erosion and sedimentation, measure to avoid introduction of harmful substances into fish-bearing watercourses, etc.);
- describe the measures for prevention and mitigation of the risk of harmful, destructive or disruptive activities during the sensitive periods and in the sensitive locations (e.g. spawning and migration) for fish in water or places frequented by fish, including the consideration of sensitive periods for fish;

- include measures to mitigate sensory disturbance and functional fish habitat loss that it may cause;
- describe the measures recommended to avoid fish mortality during use of explosives in the aquatic environment or nearby, or by fish entrainment during pumping and water withdrawal operations (e.g. during the construction of temporary structures and of hydrostatic tests);
- describe mitigation measures to prevent the deposit of harmful substances to fish in the water or in the zones frequented by fish;
- identify the timing of the project activities in the water, including the periods and windows of limited activity;
- describe the conditions on which the crossings of watercourses and riparian areas would be restored and maintained after construction of the project;
- describe the measures recommended for restoration of locations in the riparian and aquatic environments;
- describe the criteria for assessment of the successful restoration of fish-bearing watercourses, as well as the mode and timing and the conditions of documentation of this assessment;
- describe the mitigation measures to be applied during hydrostatic tests, including for water withdrawal and discharge activities;
- describe the measures recommended to eliminate the introduction of invasive aquatic species during work in the aquatic environment; and
- describe the standard measures, policies and commitments regarding mitigation that constitute technical and economically feasible proven mitigation measures and that will be applied in common practice, regardless of the location, as well as any new or innovative mitigation measure proposed.

Also consult Section 19.8. *Compensation plans* below.

19.5. Resident and migratory birds and their habitat

The Impact Statement must describe the measures for mitigating potential effects on resident and migratory birds and their habitat, including:

- specify the measures to prevent and mitigate the risk of harmful, destructive or disruptive activities during sensitive periods and in sensitive locations (e.g. migration and nesting) for birds, their nests and their eggs, or areas frequented by birds;
- include measures to mitigate sensory disturbance and the functional habitat loss it may cause;
- describe the recommended measures for preventing the deposit of substances harmful to migratory birds in areas frequented by migratory birds (e.g. drilling mud from watercourse and wetland crossings);
- demonstrate how the proponent considered the timing of vegetation removal and construction to be outside the main breeding season.
 - In this regard, and for nesting periods, the proponent is encouraged to refer to the [Guidelines to reduce risk to migratory birds](#) and to ECCC's website on [General nesting periods for migratory](#)

[birds](#). It should be noted that these dates cover the main nesting period of migratory birds, which reduces the risk of taking their nests or eggs. This recommendation does not authorize the disruption, destruction or taking of a migratory bird, its nest or its eggs outside these periods.

- In addition, the [Nesting Calendar Query Tool](#) by Birds Canada can be used to create customized nesting calendars for particular species and places of interest. The nesting calendars are created based on the main portion of the nesting season and can be sorted by different categories, such as species, ecodistricts, bird conservation regions, ecoregions, nesting areas, provinces and territories, federal protection, habitats, nest type and species type. For example, calendars subdivided by ecodistrict indicate the percentage of selected bird species that are likely to nest based on the ecodistrict selected. The tool contains a warning, which provides important information about the definition of the nesting periods, the accuracy of nesting dates and the protection of bird nests and eggs. This warning should be read before using the tool; and
- indicate how mitigation measures for effects on eskers serve as mitigation measures for birds, since this type of geological formation presents a type of land cover that is not widespread and is of great value to forest birds during migration and reproduction.

19.6. Vegetation and other wildlife and its habitat

In addition to the wildlife discussed above, the Impact Statement must describe the measures for mitigating potential effects on vegetation and other wildlife and their habitat, including:

- describe and explain the condition in which the temporary construction areas and the permanent right-of-way will be restored or maintained following construction, and explain the mitigation measures considered including possible revegetation, obstruction of the sightline, restoration of wildlife corridors and habitat connectivity, reduction of fragmentation and reduction of long-term cumulative effects;
- describe and explain the measures to control the use of the right-of-way and new access roads to access areas that were previously difficult to reach, including by wildlife predators as well as by hunters, off-roading recreationalists, and other users;
- provide the best technically and economically feasible approaches for mitigating effects on habitat, aligned with the hierarchy of mitigation measures, and justify moving from one mitigation option to another;
- include measures to address sensory disturbance and the resulting functional loss of wildlife habitat; and
- take into account species of interest to Indigenous peoples in the identification of mitigation measures for potential effects on species and ecological communities.

19.7. Species at risk

The Impact Statement must describe the measures for mitigating potential effects on species at risk, as well as ecological communities at risk, including:

- describe the proposed mitigation measures for potential adverse effects on species and critical habitat listed under Schedule 1 of the SARA. These measures must be compatible with any applicable recovery strategy and action or management plan and be described in terms of the effectiveness of each measure in avoiding negative effects. Include a full justification, based on scientific data, for the proposed measures;
- describe mitigation measures to reduce the risk of harmful, destructive or disruptive activities in sensitive times and places of importance to species at risk;
- describe measures to prevent the release of harmful substances into waters or areas frequented or occupied by species at risk; and
- provide mitigation measures for effects on habitat, aligned with the hierarchy of mitigation measures and justify moving from one mitigation option to another.

With respect to bats:

- describe the effectiveness of the mitigation measures, taking into account the configuration of the resources in the environment and how local bat populations use these resources;
- describe how bat behaviour (differentiated by species) has been taken into account, based on the geographical location and time period; and
- at minimum, the following mitigation measures should be implemented:
 - spatial avoidance:
 - a buffer zone of 120 m is recommended;
 - for resting areas and nurseries in trees, apply a buffer zone to the entire complex of roosts and nurseries; and
 - for hibernacula, apply the buffer zone to the entire underground cave and mine system;
 - temporal avoidance (timing of disruption, destruction of resting areas or exclusion):
 - avoid disruption, destruction and exclusion between April 30 and September 1;
 - lighting:
 - avoid or minimize the use of artificial light in bat habitats;
 - select low-intensity lighting;
 - use lighting fixtures that restrict or focus illumination to target areas;
 - avoid lights that emit blue/green/white/UV wavelengths.
 - follow the [Canadian National White-nose Syndrome Decontamination Protocol for entering bat hibernacula](#) (Canadian Wildlife Health Cooperative); and
 - other compensation.

With respect to caribou:

- demonstrate that measures to avoid and minimize effects will be applied for boreal caribou and its critical habitat;

- describe all reasonable alternative means of carrying out the project that would avoid the adverse effects of the project on boreal caribou;
- describe how these alternative means have been considered, and provide a rationale to confirm that the best solution has been adopted to mitigate adverse effects on boreal caribou; and
- describe all feasible measures that will be taken to minimize the adverse effects of the project on boreal caribou and its critical habitat, such as:
 - minimize the footprint of the development and consider locations where the habitat is already disturbed;
 - restore the habitat to provide availability of undisturbed habitat over time;
 - avoid destruction of biophysical attributes (see [Appendix H of the recovery strategy](#));
 - minimize noise, light, smell and vibrations;
 - develop a management plan;
 - use techniques to prevent predators from using the corridor; and
 - report on how the project and mitigation measures are consistent with the recovery strategy, action plan or management plan for the species.

With respect to turtles:

- follow the advice and recommendations of the Quebec Turtle Recovery Team, particularly with respect to protection and mitigation measures for roads, gravel pits, sand pits and agricultural and forest environments.

See also compensation plans below in section 19.8 “Compensation plans”.

19.8. Compensation plans

Residual effects resulting from the project may need to be offset by implementing compensatory measures. Where compensatory measures are proposed as measures to mitigate residual effects on species at risk and their critical habitats, fish and fish habitat, and wetland functions, the Impact Statement must include offsetting or compensation plans for consideration during the impact assessment process.

In general, these plans should address the following elements, or refer to locations in the Impact Statement where this information is presented:

- describe the baseline conditions of the species at risk, critical habitat, and wetland functions potentially impacted by the project;
- explain and justify the hierarchy of mitigation measures considered;
- identify and describe residual effects that are the subject of the compensatory measures;
- identify a compensation ratio with rationale, including how any policies or guidance provided by federal and provincial authorities and Indigenous peoples have been considered;
- where feasible, identify the location and timing of implementation of compensation projects;

- identify and describe the success criteria;
- identify and describe in detail non-habitat related compensation measures (e.g. predator control);
- describe how the proposed measures align with published provincial and federal recovery management or action plans and strategies for species at risk, or for fish and fish habitat;
- describe how the proposed measures align with published provincial and federal recovery management or action plans and strategies for wetlands;
- identify, if possible, the parties responsible for implementation of the compensatory measures, including monitoring and review;
- identify indicator species for setting compensation objectives. The choice of indicator species should be based on baseline data. Species at risk should not be used as indicator species, since compensation efforts must be specifically directed to these species;
- describe the selection process for proposed compensation sites and associated baseline conditions;
- provide a description of the monitoring schedule and activities to be completed to verify the success of compensation activities; and
- if offsets are required to address residual effects, refer to the [Operational Framework for Use of Conservation Allowances](#).

The proponent must explain how Indigenous peoples were involved in the development of the compensation plans. The proponent must demonstrate how the information received from Indigenous peoples has been taken into account, including the choice of compensation ratios, if applicable. The proponent must also elaborate on how Indigenous peoples will be involved in the implementation of the compensation measures and the evaluation of the success of these measures.

For compensation plans targeting species at risk, the proponent can refer to Template 2 in the [Species at Risk Act Permitting Policy](#).

For fish and fish habitat, each offsetting plans should include:

- an exact location for the proposed measures of the project (latitude and longitude, lot number, municipality, regional municipality county, etc.) and property rights;
- baseline information including a description of the environment (biological, hydrological, physical, chemical, etc.), an estimation of the quality of the environment in question and a description of the issue to address. Ideally, the description of the environment should be accompanied by georeferenced and dated photographs;
- a description of the proposed measures (nature, extent, method, timetable, etc.);
- the fish species affected by the proposed measures, including the resulting fish habitat functions (feeding, reproduction, rearing, shelter, growth, migration);
- an assessment of the benefits to fish and fish habitat resulting from the offsetting measures in terms of the significance, magnitude and adequacy of the gains to be achieved with respect to the current situation; and

- a follow-up program to measure the success of offsetting objectives, including the details of its implementation. Offsetting objectives as well as the methods and criteria used to evaluate success (parameters, frequency, duration, etc.) must be clearly identified and described. Deliverables must be identified (e.g. baseline information, follow-up protocol, plans and specifications, work report, follow-up report, etc.), along with contingency measures in case success criteria are not met. The offsetting objectives and the timelines of the follow-up program (including deliverables) should be compiled in one or more tables.

With respect to wetlands, compensation plans should:

- clearly indicate the location and total area of each type of wetland, as well as their respective locations, for which the residual effects should be mitigated by compensation measures;
- favour the restoration of drained or altered natural wetlands of the same type and function as those affected by the project. Wetland restoration is preferable to wetland enhancement, both of which are preferable to the development of existing wetlands or the creation of new wetlands;
- demonstrate that wetland functions can be replaced by the proposed compensation activities;
- indicate where it is not possible to compensate for the loss of functions in cases where wetlands are unique, perform habitat functions that ensure the survival of a large proportion of migratory birds, or provide habitat for species at risk; and take this information into consideration when developing compensation measures;
- use a minimum ratio of 2:1 for the area of wetlands to be restored or created, versus the original area of wetlands affected. A higher compensation ratio is recommended for wetland types where compensation is more difficult or where there is uncertainty about the success of the compensation measures. The choice of ratio for wetland compensation needs to be justified;
- prioritize compensating for locally affected wetland functions. If this is not possible, the preference is to compensate within the same watershed, and then within the same ecosystem as the one where functions are affected;
- minimize the delay between the time the adverse effects occur and the time habitat and functions are restored; and
- explain how vegetation removals, as well as soil and peat excavation activities will be managed for reclamation of disturbed wetlands (e.g. methods, conditions and timing of stockpiling).

19.9. Climate change and greenhouse gas emissions

The Impact Statement must:

- include a process for identifying the best available technologies and best environmental practices that are technically and economically feasible to reduce direct GHG emissions, as per section 5.1.4.1 of the SACC. The result of this determination will include:

- the technologies that will be used to reduce the project's GHG emissions. These technologies could include, but are not limited to, the use of low-emission technologies, the use of low-carbon or renewable fuels, electrification or carbon capture and storage;
- the practices that will be followed to mitigate GHG emissions from the project, such as anti-idling measures for mobile equipment, leak detection and repair systems, continuous monitoring systems, or fleet optimization;
- additional technologies and practices that could be used during project maintenance and facility upgrade periods to further reduce GHG emissions from the project over its lifecycle, as well as the planning processes, timing and circumstances linked to these potential technologies and practices;
- include a description of the measures taken to mitigate the project's impact on carbon sinks, including measures to rehabilitate disturbed carbon sinks, if applicable;
- depending on the public availability of information, provide a comparison of the project's projected GHG emissions intensity with the emissions intensity of similar projects in Canada and internationally that are good examples of energy-efficient or low-emissions projects. The comparison should explain why the emissions intensity may be different;
- include a credible plan that describes how the project will achieve zero net emissions by 2050. The plan must demonstrate how the net GHG emissions equation in section 3.1.1 of the SACC (Equation 1) will equal 0 kt CO_{2e} by 2050 and for the remainder of the project's lifecycle. The plan must include the following information for each emission source:
 - a list of potential GHG mitigation measures (best available technologies and best environmental practices, emerging technologies) and the level of technological maturity (when the technology could be implemented) at all phases of the project, including for equipment replacements;
 - the potential percentage reduction in GHG emissions associated with each mitigation measure over the life of the project. Further discussion of each mitigation measure, including associated costs, technical challenges, risks, infrastructure requirements and any other relevant considerations, and how the proponent could overcome them;
 - a description of any additional mitigation measures (such as direct air capture technology and reforestation) to further mitigate the remaining GHG emissions, if applicable;
 - a description of any offset credits that have been or will be obtained to further mitigate the remaining GHG emissions, if applicable. Proponents may also provide information on their intention to acquire or generate international offset credits. Offset credits must meet the criteria in section 3.1.1. of the SACC and be considered as the last option in terms of GHG mitigation measures;
 - the project implementation schedule providing the GHG emissions and emissions intensity expected for each year over the lifecycle of the project, with a focus on 2050 and the goal of zero net emissions; and
 - any other relevant information such as government support measures that would enable the proponent to achieve zero net emissions.

19.10. Human health

The Impact Statement must describe the proposed mitigation and enhancement measures for any potential effects on human health, including:

- describe the mitigation and enhancement measures proposed separately for Indigenous peoples and for each Indigenous community;
- if the level of emissions from a particular project or effluent discharge is below or at the applicable limits, identify if additional mitigation measures will still be considered. However, if the change may be substantial (even within established limits) as a result of local or regional circumstances or the extent of the change, the proponent must provide additional mitigation measures to minimize pollution and risks to human health;
- when potential effects on human health exist due to exposure to a non-threshold contaminant (e.g. certain air pollutants such as fine particulate matter and nitrogen dioxide, as well as arsenic and lead in drinking water), describe mitigation measures aimed at reducing residual effects to as low a level as reasonably possible;
- describe how the GBA+ results on disproportionate effects have been used to inform mitigation and enhancement measures;
- propose differentiated mitigation measures, if applicable, so that adverse effects do not fall disproportionately on Indigenous peoples and vulnerable subgroups, and they are not disadvantaged in sharing any positive effect resulting from the project. These mitigation measures should be developed in collaboration with the potentially affected communities and subgroups; and
- identify mitigation and enhancement measures presented in other sections that are also applicable to health and well-being effects.

The proponent is encouraged to refer to the National Collaborating Centre for Healthy Public Policy's publication entitled [*Tools and approaches for assessing and supporting public health action on the social determinants of health and health equity*](#).

19.11. Social components

The Impact Statement must describe the mitigation and enhancement measures that will be implemented for all potential effects on social VCs, including:

- identify opportunities to enhance positive impacts, such as improving infrastructure;
- take into account local and regional land use and development plans where applicable mitigation or enhancement measures are proposed;
- describe mitigation measures considered for heritage and structures, sites, and things of significance, as well as contingency plans and communications plans in the event of such discoveries during construction;

- propose differentiated mitigation measures, if applicable, so that adverse effects do not fall disproportionately on Indigenous peoples and vulnerable subgroups, and they are not disadvantaged in sharing any positive effect resulting from the project. These mitigation measures should be developed in collaboration with the potentially affected communities and subgroups; and
- describe how the GBA+ results on disproportionate effects have been used to inform mitigation and enhancement measures, including measures to prevent sexual harassment and gender-based violence.

19.12. Economic components

The Impact Statement must describe the mitigation and enhancement measures that will be implemented for all potential effects on economic conditions, including:

- identify opportunities for enhancing positive effects, such as creation of local employment and Indigenous employment, including :
 - describe education, training and hiring practices that encourage employment of local people;
 - describe actions taken to increase access to education and training opportunities for different groups (e.g. provision of transportation, flexible hours);
 - provide a summary of commitments made with respect to employment, training and trade, including any economic benefit plans or specific cooperation agreements with Indigenous communities and peoples;
 - describe the training, education, and scholarship programs that the proponent plans to support in order to improve employment opportunities, including participation in and contribution to local training networks. Specify the types of employment targeted by these programs, as well as the targeted clientele, such as local residents, Indigenous peoples, and various relevant subgroups (e.g. Indigenous women);
 - describe cultural competency training plans for non-Indigenous employees to ensure a respectful working relationship with Indigenous contractors;
 - describe all cultural awareness training plans for non-Indigenous employees to promote a safe work environment that fosters the well-being of Indigenous employees;
- describe plans, programs and policies to encourage contracting and procurement opportunities for local and regional businesses and Indigenous peoples;
 - describe supplier network development initiatives, including the identification of potential local suppliers, and plans to provide them with information on technical, commercial and other requirements, and to debrief unsuccessful bidders;
 - describe technology transfer and research and development programs that will facilitate the use of local suppliers of goods and services and local employees, and that will develop new capabilities related to project requirements;
 - elaborate on the potential of the project to benefit community members in relevant subgroups;

- assess the potential for local and Indigenous communities along the pipeline routing to benefit from improved access to natural gas as an energy source;
- where appropriate, provide details regarding financial liability and compensation in place as required by regulation or the proponent's commitments in relation to decommissioning or abandonment;
- describe and justify the need for compensation plans to mitigate potential effects on social and economic VCs related to Indigenous peoples;
- describe all cultural awareness training plans for non-Indigenous employees to promote a safe work environment that supports the well-being of Indigenous employees;
- propose differentiated mitigation measures, if applicable, so that adverse effects do not fall disproportionately on Indigenous peoples and vulnerable subgroups, and they are not disadvantaged in sharing any positive effect resulting from the project. These mitigation measures should be developed in collaboration with the potentially affected communities and subgroups;
- describe plans to encourage the recruitment, development, retention and advancement of women and local workers more generally (i.e. establish employment targets for specific subgroups, such as setting targets for the number of women in management positions and on boards of directors); and
- describe how the GBA+ results on disproportionate effects have been used to inform mitigation and enhancement measures.

19.13. Indigenous peoples

The Impact Statement must describe the mitigation and enhancement measures that will be implemented for all potential effects on Indigenous peoples, as well as on potential impacts to the rights or interests of Indigenous peoples. This includes, but is not limited to:

- describe all mitigation and enhancement measures proposed for potential effects as described in the previous sections that will also apply to effects on Indigenous peoples and impacts on their rights, and elaborate on how these measures may vary for each Indigenous people and community;
- demonstrate how the timing of Indigenous activities on the land was considered when establishing the schedule for project activities;
- provide a intervention plan pertaining to heritage resources and structures, sites, and things of historical, archaeological, paleontological, or architectural significance, if there is a possibility of discovery during construction or development activities. This plan must include, at a minimum, the person to be contacted, intervention measures and the conditions that would lead to a shutdown and resumption of work;
- provide copies of correspondence from provincial or territorial heritage resource authorities containing their comments on the heritage resource assessment and proposed mitigation measures;
- describe the measures that will be implemented by the proponent for the potential impacts of the project on the exercise of rights, including how the measures directly address the possible impacts of the project on the exercise of rights and the scope of the measures;

- describe the measures that would enhance or support the exercise or practice of rights in the project area (e.g. employment, procurement and monitoring measures);
- describe how the proponent has addressed the suggestions and recommendations made by potentially affected Indigenous peoples;
- propose differentiated mitigation measures, if applicable, so that adverse effects do not fall disproportionately on Indigenous peoples and vulnerable subgroups, and they are not disadvantaged in sharing any positive effect resulting from the project. These mitigation measures should be developed in collaboration with the potentially affected communities and subgroups; and
- describe how the GBA+ results on disproportionate effects have been used to inform mitigation and enhancement measures.

20. Residual effects

After considering the consequences of technically and economically feasible mitigation measures, the Impact Statement must describe any residual environmental, health, social or economic effects –and whether those effects would occur in the local or regional study area. This includes consideration of both positive and negative effects (both direct and indirect) of the project and input received from the public, Indigenous peoples, lifecycle regulators, jurisdictions, federal authorities and other participants. If an Indigenous person identifies that there are residual effects to rights or interests, those effects should be carried through for residual effects analysis. Where appropriate, information regarding residual effects should be disaggregated by sex, age and other community relevant identity factors to identify disproportionate residual effects for diverse subgroups as per the GBA+.

The proponent must describe the extent to which residual effects are significant. Where relevant, or where best practice or evidence-based thresholds exist, effects should be described using criteria to quantify significant effects. This includes criteria such as whether the effects are high or low in magnitude, the geographical extent, timing, frequency, duration and reversibility of the effects, taking into account any important contextual factors.

In addition, effects should be characterized using language most appropriate for the effect (e.g. impacts on rights and interests of Indigenous peoples and social effects may be described differently from biophysical effects). The description of the effect can be either qualitative or quantitative. For other effects, it may be more appropriate to use other criteria, such as the nature of the effects, directionality, causation and probability.

Effects may affect the local communities and Indigenous people in different ways, and therefore they may respond differently to them. Characterizing effects should be based largely on the level of concern expressed through engaging with the affected Indigenous peoples and community members. There are tools that can assist with these predictions and analyses, including multi-criteria analysis, risk assessment and modelling, in addition to seeking out expert and stakeholder input. Ethical guidelines and relevant cultural protocols governing research, data collection and confidentiality must be adhered to.

The Impact Statement must:



- characterize the residual effects, even if deemed small or negligible, using criteria most appropriate for the effect;
- take into account the following criteria for residual effects, as appropriate:
 - magnitude;
 - geographic extent;
 - timing;
 - duration;
 - frequency;
 - reversibility; and
 - the ecological, health, social and economic context within which potential effects may occur must be taken into account when considering all of the key criteria above, for example:
 - the sensitivity and importance of affected aquatic and terrestrial species, including species at risk and species of importance for Indigenous peoples;
 - the sensitivity and importance of affected habitats and their functions for wildlife;
 - the existence of environmental standards, guidelines and other sources of information to assess the impact;
- describe the extent to which the adverse effects within federal jurisdiction and the adverse direct or incidental effects are significant;
- justify the choice of criteria used to determine the extent to which these effects are significant. The information provided must be clear and sufficient to allow the Agency, the review panel, technical and regulatory bodies, Indigenous peoples and other participants to review the proponent's effects analysis;
- identify and explain relevant sources of information that were used to characterize the extent to which those effects were significant, including views of Indigenous peoples and other participants; and
- where applicable, specify the likelihood of, or potential for, residual effects occurring, and describe the level of scientific uncertainty associated with the data and methods used in this analysis.

The Agency prepared a Technical guidance document for [Determining whether a designated project is likely to cause significant adverse effects under the *Canadian Environmental Assessment Act, 2012*](#). The best practices described in this document could also apply to the characterization of residual effects in the context of the IAA.

Other sources of best practices may complement the technical guidance from the Agency and be used by the proponent as reference. For example, regarding species at risk and their habitat, the report [NatureServe Conservation Status Assessments: Factors for Evaluating Species and Ecosystem Risk](#) is a reference to evaluate criteria against applicable thresholds.

21. Cumulative effects assessment

The proponent must assess the project's cumulative effects using the approach described in the Agency's guidance documents related to cumulative effects. The Agency developed technical guidance called [Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act \(2012\)](#), which the proponent is encouraged to consult to complete its analysis. The best practices described in this document also apply to the assessment of cumulative effects under the IAA.

Cumulative effects are defined as changes to the environment, health, social and economic conditions, after consideration of mitigation measures (residual effects), combined with the effects of past, existing and reasonably foreseeable projects and physical activities.

Cumulative effects may result if:

- the implementation of the project may cause residual adverse effects on the VCs; and
- the same VCs have been affected or can be affected by other past, existing and future projects and physical activities.

A cumulative effect on an environmental, health, social or economic component may be significant even if the project's effects to this component by themselves are minor. Activities from the project itself that generate multiple emissions and discharges (e.g. simultaneous operations) may also need to be considered in the cumulative effects analysis to understand synergistic, compensatory, masking or additive effects.

The Impact Statement must:

- identify the VCs that will be subject to the cumulative effects assessment;
 - VCs for which the proponent anticipates residual effects from the project must be considered in the cumulative effects assessment;
 - the proponent can refine its analysis by taking into account selected VCs that are most likely to be affected by the project in combination with other past, existing or future projects and physical activities, as well as those identified as being of particular concern in the context of cumulative effects by the public and by Indigenous peoples (see list below);

finalization of the selection of appropriate VCs and boundaries, including potential transboundary areas, for cumulative effects assessment should be informed by consultations with the public, Indigenous peoples, lifecycle regulators, jurisdictions, federal authorities and other participants;
- include a rationale if VCs are excluded from the cumulative effects assessment;
- identify and justify the spatial and temporal boundaries of the cumulative effects assessment for each selected VC. Take into account that:
 - the boundaries of cumulative effects assessments may differ for each selected VC and should not be limited by administrative boundaries;
 - spatial and temporal boundaries for cumulative effects will generally be larger than boundaries for the effects of the project alone, and may extend beyond the jurisdictional boundaries of Canada;

- temporal boundaries must be based on appropriate baseline conditions and should account for all potential effects over the life cycle of the project, including decommissioning or abandonment; and
- spatial and temporal boundaries for VCs related to effects and impacts on Indigenous peoples must be defined in collaboration with the Indigenous peoples concerned;
- identify sources of potential cumulative effects. Specify which other projects or activities that have been or will be carried out that could have resulted or could result in effects on the selected VCs within the defined boundaries and whether those effects could interact with the residual effects of the project. Clearly explain and justify the rationale for selecting other past, existing or future projects or activities to include in the cumulative effects assessment. Projects to be considered include but are not limited to:
 - the project that involves the construction and operation of a natural gas liquefaction facility and export terminal in Saguenay, Quebec, proposed by GNL Quebec Inc.;
 - potential expansion of the pipeline or connection projects, if reasonably foreseeable;
 - past, existing and future mine projects;
 - past, existing and future infrastructure projects; and
 - past, existing and future projects and physical activities contributing to the fragmentation of the territory, including agriculture, forestry activities, power transmission lines and other linear projects;
- take into account the results of any relevant regional studies;
- assess the cumulative effects for each VC;
 - the analysis must include the effects of past and future projects and physical activities in combination with the residual effects of the project, taking into account how the effects may interact (additive, synergistic, compensatory, and masking effects);
 - the analysis of the effects of future projects and physical activities may include a comparison of possible future scenarios with and without the project, but must reflect the full range of cumulative effects and not just the project's contribution;
 - the effects of past and existing projects and physical activities can be used to put the current state of the VC into context, but must be included in the cumulative effects analysis; and
 - cumulative effects for the same VC may need to be assessed using a hierarchy, e.g. effects on local populations of certain species and on the larger populations. For caribou, cumulative effects must be assessed for the three project study areas defined in section 6.4 "Establishing spatial and temporal boundaries", as well as throughout the federal Val d'Or caribou range (QC1);
- describe technically and economically feasible mitigation measures proposed for cumulative effects on the environment, health, social and economic conditions, as well as the potential impacts on the rights and interests of Indigenous peoples, including:
 - describe and assess the effectiveness of the measures applied to mitigate cumulative effects;
 - in cases where the mitigation measures for these effects are beyond the proponent's control, identify all parties with the power to act on these measures. In such cases, the Impact Statement shall summarize the commitments of the other parties in relation to implementing the necessary measures and any related communication plan;

- assess the regional implications of applying project-specific mitigation and enhancement measures, taking into account any reasonably foreseeable development in the area;
- describe, where appropriate, the extent to which the adverse cumulative effects are significant, taking into account applicable tolerance levels, including those identified by Indigenous peoples and other participants; and
- develop a follow-up program to verify the accuracy of the assessment and the effectiveness of mitigation measures for applicable cumulative effects.

The cumulative effects assessment must include consideration of cumulative effects to the rights of Indigenous peoples and their cultures. Both the content and means of presenting this information is to be developed in consultation with each Indigenous people potentially impacted by the project. Proponents are encouraged to collaborate with Indigenous peoples in the cumulative effects assessment. The Impact Statement must demonstrate how Indigenous peoples were involved in the cumulative effects assessment and in the design of appropriate mitigation measures and follow-up programs. If Indigenous peoples do not wish to participate in the cumulative effects assessment with the proponent, the proponent must share a preliminary draft of the cumulative effects assessment on the Indigenous people's rights and culture with them in order to receive feedback prior to submitting the Impact Statement to the Agency.

The proponent must consider the following cumulative effects raised during the Planning Phase in the cumulative effects assessment, or justify their exclusion, where appropriate:

- cumulative effects related to fragmentation, including habitat disturbance and loss, barriers to movement, and direct and indirect mortality of wildlife species (e.g. moose, caribou, furbearers important to Indigenous peoples, fish at the watershed level);
- effects at the watershed scale on water quality (e.g. on fish and fish habitat, and on health);
- effects on migratory birds and their habitats, including eskers;
- interactions with effects from mining projects and activities, notably for groundwater and noise;
- greenhouse gas emissions and how climate change will interact with project effects, notably on biodiversity and ecosystems;
- erosion and sedimentation of waterways that cross the project's right-of-way;
- effects on species of interest, species of special concern and species at risk;
- effects on the moose population of the Réserve faunique de la Vérendrye;
- direct and indirect effects related to changes in migratory routes for wildlife species;
- effects of increased access to the territory on the current use of the territory by Indigenous peoples;
- effects on the practice of current traditional activities and areas of interest (e.g. medicinal plants, wild berries, and other non-timber forest products);
- effects on the social conditions and culture of Indigenous peoples;
- effects on community well-being;
- effects on the sustainable development of the territory; and

- impacts on the rights of Indigenous peoples, as well as the loss of opportunities to exercise these rights.

22. Other effects to consider

22.1. Effects of potential accidents or malfunctions

The failure of certain works caused by malfunctions, human error or malicious act, or natural events (e.g. flooding, earthquake, landslide, forest fire) could cause major effects. The proponent must therefore conduct an analysis of the risks of accidents and malfunctions for which the minimum requirements are:

- identify hazards for each project phase that could lead to events of accidents and malfunctions;
- conduct an analysis of the risk of each hazard/adverse event (including likelihood and consequences) – note that if certain events are expected to occur (e.g. minor spills, road accidents), they should be included as expected effects in the previous sections;
- include a description and consideration of plausible worst-case scenarios;
- determine potential effects (including environmental, health, social and economic effects, including effects on Indigenous people);
- describe the measures to reduce the likelihood and mitigate consequences of the events; and
- present preliminary emergency measures to respond to such events, including identifying associated response systems and capabilities.

Taking into account the above minimum requirements, the Impact Statement must:

- for the identification of possible accidents and malfunctions related to the project, take into account the lifespan of different project components as well as complicating factors (weather or external events), including the potential for vandalism or sabotage;
- provide an explanation of how these events were identified (e.g. information sources, recognised risk assessment methodology, professional expertise, similar project, participants input, etc.);
- take into account available data and information relevant to the project, such as those from the CER Website and from the Transportation Safety Board of Canada.
- identify and justify spatial and temporal boundaries for the assessment of effects associated with accidents and malfunctions. The spatial boundaries established for the effects resulting from possible accidents and malfunctions will generally be larger than the boundaries for effects of the project alone;
- for all plausible scenarios and worst-case scenarios for accidents and malfunctions associated with the project, describe the magnitude and extent of those, including a description of the quantity, mechanism, rate, form and characteristics of contaminants, greenhouse gases and other materials likely to be released or discharged into the environment and any effects on the environmental, health, social and economic effects and effects on Indigenous peoples;

- for the effects assessment and the development of mitigation measures, take into account the influence of local and regional particularities of the terrain, in particular in terms of topography (e.g. difficult access for interventions) and weather conditions such as permafrost and snow and ice cover;
- for the effects assessment, take into account sensitive periods (e.g. migration or nesting period, hunting season, tourist season, etc.) and sensitive receptors;
 - include environmental sensitivity mapping that identifies site-specific conditions and sensitive receptors adjacent to project activities, including banks, streams and wetlands frequented by fish and/or migratory birds, local residents in the emergency planning zone, potable water well, and likely access routes to them;
- analyze the risk of explosion linked to the project;
- assess the risk of an accidental fuel spill, whether minor or major, uncontrolled releases of natural gas, or loss of containment of dangerous goods at permanent or temporary facilities during construction and operations, or during maintenance activities;
 - provide an analysis of the potential environmental, health, social and economic effects of these releases on aquatic and terrestrial environments and on human health within the spatial boundaries identified for the study area;
- describe the mitigation measures and safeguards that would be in place to avoid and prevent accidents and malfunctions, including design choices (e.g. the number of block valves, material and method used for construction in order to prevent leaks in aquatic environment);
- describe the mitigation measures applicable for the potential adverse environmental, health, social and economic effects in the event of an accident or malfunction, such as the emergency response and repair procedures that would be put in place (e.g. drilling mud leak when crossing water bodies and watercourses);
- describe the role of the proponent in the case of an accident or malfunction associated with the project;
- describe the proposed mechanisms for emergency preparedness and response, including plans for coordination with agencies involved in a pipeline emergency;
- describe how the proponent will coordinate its emergency operations, both internally with its emergency management system and externally with its response partners such as regional intervention organizations, and describe how these will be consulted for the planning of emergency measures;
- take into account vacation areas in the planning of emergency measures as well as the particularities linked to these areas (e.g. number of residents varying with the seasons, possible high number of individuals unfamiliar with the region, limited communication means in remote areas and with temporary residents);
- describe emergency response training and exercise programs, including a description of the participation and training agreements with Indigenous communities;
- identify any critical infrastructure, such as local drinking water treatment plants or facilities that can treat water sources affected by the project, as well as the ability of the drinking water treatment plants or facilities to treat water sources affected by accidental releases from the project during all project phases;

- provide details of financial liability and compensation in place pursuant to regulations or the proponent's commitment;
- describe mutual aid arrangements in the event that the incident exceeds proponent resources and how to access these resources;
- describe emergency communication plans that would provide emergency instructions to surrounding communities, including Indigenous peoples and how these will be informed by the public and Indigenous peoples. The proponent should consider including:
 - immediate urgent actions, such as notifying the public of security concerns, instructions for on-site shelter, procedures and evacuation routes; and
 - longer-term actions, such as a general website and telephone helplines, updates on the status of incidents, injured animal reports, etc.;
- describe long-term monitoring and recovery measures that would be implemented to manage effects to the environment and health, social and environment conditions from accidents and malfunctions, including those to clean up affected lands and waters;
- describe liaison and continuous education plans linked to emergency preparedness for surrounding communities that may be affected by the consequences of a significant incident, including for Indigenous communities. Describe the details of the emergency plans with regard to potential gas leaks, among other things; and
- explain how the proponent has made and will continue to make an outreach effort to ensure public and Indigenous peoples' understanding of the risks associated with this type of project (e.g. include a non-technical report).

22.2. Effects of the environment on the project

The Impact Statement must consider and describe how environmental conditions, including natural hazards such as severe and/or extreme weather conditions and external events (e.g. earthquakes, flooding, drought, ice jams, iceberg impacts, permafrost conditions, landslides/submarine landslides, tsunamis, volcanoes, avalanches, erosion, subsidence, fire, and outflow conditions), could adversely affect the designated project and how this in turn could result in effects to the environment, health, social and economic conditions. These events are to be considered in different probability patterns (e.g. 5-year flood vs. 100-year flood) taking into account how these could change under a range of potential future climate scenarios. The focus should be on credible external events that have a reasonable probability of occurrence and for which the resulting environmental effects could be major without careful management. The Impact Statement should also consider how effects of the environment on the project could have positive effects to the environment, health, social and economic conditions.

The Impact Statement must:

- provide details of planning, design and construction strategies intended to minimize the potential adverse environmental effects of the environment on the project;
- identify any areas of potential wind or water erosion;

- assess the potential effects of seismic events on facilities and specify the soil movement parameters that will be used with the probability of occurrence (e.g. 2% in 50 years) and the best practice codes and guides that are or will be used in the seismic effects analysis (e.g. National Building Code of Canada 2015, CAN/CSA-Z662 standard);
- describe mitigation measures that can be implemented in anticipation of or in preparation for the effects of the environment on the project;
- describe possible mitigation measures to address adverse environmental, health, social and economic effects resulting from the effects of the environment on the project;
- identify the project's sensitivity/vulnerability to climate change (under both average and extreme conditions);
- describe the project's climate resilience and how climate change impacts have been integrated into the project design and planning throughout the life of the project, and describe the climate data, projections and related information used to assess risks over the life of the project;
- describe all known and relevant trends in meteorological events, weather patterns or physical changes in the environment that are expected to result from climate change, and incorporate this information into a risk assessment as contributing or complicating factors for accidents and malfunctions (e.g. increased risk of forest fires). Provide mitigation measures (both passive and active) that the proponent is prepared to take to minimize the frequency, severity and consequences of these projected effects; and
- describe measures to enhance the positive environmental, health, social and economic effects resulting from the effects of the environment on the project.

Further guidance on how to conduct a climate change resilience assessment can be found in the SACC developed by ECCC.

23. Canada's ability to meet its environmental obligations and its climate change commitments

The Government of Canada, through the IAA, recognizes that impact assessment contributes to Canada's understanding and ability to meet, first its environmental obligations, and second, its climate change commitments.

In accordance with paragraph 22(1)(i) of the IAA and paragraph 183(2)(j) of the CER Act, the Impact Statement should describe the effects of the project in the context of the environmental obligations and climate change commitments, focusing on the obligations of the Government of Canada relevant to the decision-making process.

Federal environmental obligations relevant to this project include the following:

- The Convention on Biological Diversity and Canada's supporting national framework (e.g. the Canadian Biodiversity Strategy, Canada's Biodiversity Outcomes Framework and the current biodiversity goals and objectives in Canada); and legislation that supports the implementation of Canada's biodiversity commitments, including SARA and the *Canada Wildlife Act (1985)*, as well as supporting policies and guidance documents¹³.
 - Recovery strategies and action plans developed under SARA for all species at risk potentially affected by the project. The "proposed Amended Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal population, in Canada 2019", in the Far North range and the Nipigon range, and in smaller ranges within this range, as designated by the Province of Ontario, is of particular importance under SARA for this project.
- The [Convention on Wetlands of International Importance especially as Waterfowl Habitat \(Ramsar\)](#), as implemented in part under the [Federal Policy on Wetland Conservation](#) and supporting guidance documents such as the [North American Waterfowl Management Plan](#).
- The [Convention for the Protection of Migratory Birds in the United States and Canada](#), as implemented in part under the *Migratory Birds Convention Act (1994)*, and supporting guidance documents on conservation objectives derived from bird conservation regions and strategies.

The Impact Statement must:

- describe the extent to which the effects of the project could contribute to or hinder Canada's ability to meet its obligations;
- describe where the project may enable Canada to meet its obligations, the proponent's plans and commitments to ensure that positive contributions are respected; and
- describe where the project may adversely affect Canada's ability to meet its obligations, the mitigation measures and follow-up programs related to those effects.

The Impact Statement must also indicate how community and Indigenous knowledge has been incorporated into the assessment with respect to the potential positive or negative effects of the project on Canada's ability to meet its obligations.

The proponent should refer to the Agency's guidance documents on this topic, including the document [Policy Context: Considering Environmental Obligations and Commitments in Respect of Climate Change under the Impact Assessment Act](#), as well as sections 14.5 "Climate change" and 19.9 "Climate change and greenhouse gas emissions" of the guidelines in reference to climate change commitments.

¹³ The proponent is encouraged to consult the publications and resources available on the biodivcanada website.



24. Description of the project's contribution to sustainability

The Impact Statement must characterize a project's contribution to sustainability. The Impact Statement should describe the context of a particular project, including the issues that are important to participants, the diversity of views expressed and the selection of VCs.

The Impact Statement must also describe the project's contribution to sustainability as defined by Indigenous peoples. For example, from the perspective of the Seven Generations Teachings and Seventh Generation Stewardship, or also in terms of health and overall impact on the rights of youth to life and safety, including environmental safety.

Once the analysis of the potential effects of a project has been conducted, the principles of sustainability should be applied:

- consider the interconnectedness and interdependence of human and ecological systems;
- consider the well-being of present and future generations;
- maximize overall positive benefits and minimize adverse effects of the project; and
- apply the precautionary principle by considering uncertainty and risk of irreversible harm.

The Impact Statement must describe how sustainability principles were applied (outlined above) and identify conclusions drawn from this analysis. This summary should be qualitative in nature, but may draw on quantitative data as necessary.

In addition, the Impact Statement must:

- indicate how the planning and design of the project, in all phases, considers the sustainability principles;
- describe the process in selecting the alternative means and alternatives to the project and how the sustainability principles were considered;
- indicate how monitoring, management and reporting systems consider the sustainability principles and attempt to ensure continuous progress towards sustainability;
- describe the ecological, health, social and economic benefits of the project to local communities within the study area, potentially affected Indigenous peoples, regional, provincial, territorial and/or federal governments; and
- describe the engagement with potentially affected Indigenous peoples and describe measures and commitments to ensuring the sustainability of Indigenous livelihood, traditional use, culture and well-being.

The proponent should refer to Agency guidance on this topic: [Interim Guidance: Considering the Extent to which a Project Contributes to Sustainability](#) and [Interim Framework: Implementation of the Sustainability Guidance](#).

25. Follow-up programs

A follow-up program verifies the accuracy of the effects assessment and evaluates the effectiveness of mitigation measures. The follow-up program will explain the uncertainties surrounding the effects and whether these uncertainties are related to impact assessment predictions or the effectiveness of mitigation measures. The information obtained through the follow-up program may be used to determine whether additional actions are needed to address unanticipated outcomes (e.g. adaptive management). The follow-up program described in the Impact Statement must explain how the need for corrective action will be detected, the anticipated effectiveness of that detection, the range of potential corrective actions that could be applied, the general circumstances under which each such action would be applied, and the expected success of each such action based on previous experience. Although adaptive management is considered a best practice in environmental management, it is not, in and of itself, considered a mitigation measure.

Potentially impacted Indigenous peoples must be consulted with regards to follow-up programs that may affect them, including on the development of the plans and participation in follow-up measures, such as monitoring and data gathering throughout the project life.

Follow-up programs are an opportunity to continue to consult affected Indigenous peoples and, if undertaken collaboratively, can support solution-oriented approaches to adaptive management through early identification of problems in follow-up programs and appropriate solutions that take Indigenous knowledge into account.

If a regional assessment is underway or has been completed in the project area, the proponent should use the resulting information to inform the factors to be considered in its follow-up program.

The factors to be considered in developing a follow-up program include, but are not limited to:

- VCs for which residual adverse effects are expected or uncertain;
- the accuracy of the predictions;
- an assessment of the effectiveness of mitigation measures;
- the level of uncertainty regarding the effectiveness of proposed mitigation measures;
- the efficiency of new or unproven techniques and technologies;
- the nature of concerns raised by participants, including Indigenous peoples, about the project;
- suggestions from Indigenous peoples and local communities on the design of and participation in follow-up and monitoring programs;
- the integration of Indigenous and community knowledge, if available;
- disproportionate effects highlighted by the GBA+;
- the nature of cumulative effects;
- the nature, extent and complexity of the program;
- any technically and economically feasible measures to manage the effects if the mitigation measures applied do not work as intended;
- whether scientific knowledge pertaining to effects is limited, or emerging;

- the parties that will be involved in implementing the follow-up program and reviewing its results;
- existing programs, procedures, and plans that provide relevant standardised or established follow-up and monitoring methods, such as from municipal, provincial, federal, or other appropriate centres of expertise;
- the duration of follow-up program activities, which may vary depending on the VCs assessed;
- any existing follow-up programs relevant to the project, and lessons that can be learned from their results;
- the commitments made by the proponent when the project was reviewed;
- the compensation programs that will be proposed to offset residual effects;
- how the results of the follow-up program will be communicated to interested parties; and
- triggers for adaptive management of any unacceptable or unexpected outcomes.

Monitoring is an essential component of effective follow-up programs. Monitoring can determine the potential for environmental, health, social or economic degradation at any stage of project development. Monitoring can also assist in developing clearly defined action plans and emergency response procedures to address the protection of the environment, health, socio-economic conditions and human safety.

25.1. Follow-up program framework

The duration of the follow-up program must be as long as necessary to verify the accuracy of environmental, health, social and economic effects predicted during the impact assessment and to evaluate the effectiveness of the mitigation measures.

The Impact Statement must present a follow-up program that includes:

- the objectives of the follow-up program and the VCs targeted by the program;
- the list of elements requiring follow-up;
- the main characteristics of each of the recommended follow-up elements, including, but not limited to:
 - the objectives to be achieved (general and specific);
 - a list of the parameters to be measured, including the recommended methodology for each parameter;
 - the proposed timelines, including the time period(s) involved (e.g. spring flood period, fish migration period), frequency and overall time frame;
- the response mechanism used in the event of unanticipated environmental effects or impacts on rights and cultures of Indigenous peoples;
- the mechanism for disseminating the results of the follow-ups (deliverables) to relevant stakeholders;
- the accessibility and sharing of data for the general public; and
- the involvement of Indigenous peoples in the design and implementation of the follow-up program, the assessment of follow-up results and any updates, including communication mechanisms between



Indigenous peoples and the proponent to ensure regular and frequent communication about the results of the follow-up program.

To accompany the description of the follow-up program, it is recommended that a table be presented showing the main characteristics for each of the recommended follow-up programs (objectives, parameters, timelines). It is recommended that an overall schedule be presented in the form of a table compiling all of the stages of achievement for each of the follow-ups, including all deliverables (e.g. baseline status pre-construction, post construction follow-up, follow-up protocol, work and follow-up reports, etc.).

With regards to migratory birds, wetlands, and species at risk, a post-construction follow-up plan should be planned in order to verify the project's effects and assess the effectiveness of the mitigation measures applied during construction.

Regarding wetlands specifically, the follow-up program should plan to monitor all seeding bi-annually (i.e. late spring and fall) in subsequent years and undertake additional seeding, if necessary, until vegetation is established and continues to grow without further intervention. A follow-up program to monitor wetland functions should be developed so that the type and quantity of each wetland function are considered individually to determine the success of restoration, and each wetland function is reduced to the same type and quantity as observed during the baseline period.

25.2. Follow-up program monitoring

The Impact Statement must describe the environmental, health, social and economic monitoring to be established as part of the follow-up program.

In particular, the Impact Statement must provide an overview of the preliminary environmental, health, social and economic monitoring program, which includes:

- the identification of monitoring activities that pose risks to the environment, health, social and economic conditions or VCs, and the measures and means to protect these conditions;
- the identification of regulatory instruments that include a monitoring requirement for VCs;
- the definition of positions responsible for monitoring and compliance, including for inspections, and confirmation that they are independent of the contractor;
- inspection procedures, as well as the accountability and reporting structure for inspectors. Describe the minimum qualifications and experience required for these roles, including training requirements for individuals who will be undertaking inspection and monitoring responsibilities;
- a description of the follow-up methodology and documentation of environmental, health, social and economic issues, taking into account guidelines and methodologies used to establish reference conditions;
- a description of the methodology and mechanism for monitoring the effectiveness of mitigation and restoration measures.

- a description of the characteristics of monitoring, where foreseeable (e.g. location of interventions, planned protocols, list of measured parameters, analytical methods employed, schedule, human and financial resources required);
- description of the proponent's intervention mechanisms in the event of the observation of non-compliance with the legal and environmental requirements or with the obligations imposed on contractors by the provisions of their contracts, including a descriptions of the quantitative thresholds that will trigger the need for corrective action;
- procedures for the production of monitoring reports (number, content, frequency, date, format, duration, geographical scope) to be transmitted to the authorities concerned;
- plans, including funding options, to engage Indigenous peoples and local communities in monitoring, where appropriate; and
- quality assurance and quality control measures to be applied to monitoring programs.

Regarding the monitoring of air pollutants that do not have established thresholds for health effects, the Impact Statement must include a description of how monitoring results will be used to trigger the proponent's response mechanisms (e.g. CAAQS for common air pollutants such as fine particles and nitrogen dioxide, and to follow the recommendation of Health Canada that concentrations of arsenic and lead in drinking water be as low as is reasonably possible);

25.3. Inspection, monitoring and follow-up

In relation to the preceding sections on monitoring and follow-up, the following monitoring requirements of the CER Act should also be taken into consideration:

- describe inspection plans to ensure compliance with the biophysical and socio-economic commitments, consistent with sections 48, 53 and 54 of the *Onshore Pipeline Regulations* (OPR). Inspection plans must be sufficiently detailed to demonstrate adequacy and effectiveness and must:
 - identify those positions accountable and responsible for monitoring and ensuring compliance and confirm that they are independent of the contractor, as required by sections 53 and 54 of the OPR;
 - reference inspection procedures, and describe the accountability and reporting structure for inspectors; and
 - describe minimum qualifications and experience required, including training requirements of individuals who will be undertaking inspection and monitoring responsibilities, as required by sections 46 and 54 of the OPR;
- describe the monitoring and control program for the protection of the pipeline, the public and the environment as required by section 39 of the OPR. The monitoring program must be sufficiently detailed to demonstrate its relevance and effectiveness and must include methods for:
 - identifying and tracking environmental and socio-economic issues;
 - resolving any environmental and socio-economic issues specific to the project, including any sampling programs or site-specific investigations as appropriate; and

- verifying the effectiveness of mitigation and reclamation, based on established reclamation criteria (see the requirements of individual elements in Table A-2 of the [CER Filing Manual](#)), as well as the proponent's performance measures and targets for each mitigation measure;
- the frequency or schedule for implementing the procedures identified above;
- the criteria for determining whether environmental and socio-economic issues require specific monitoring procedures;
- consider any project-specific aspects of greater concern and determine whether further follow-up programs are required for those aspects;
- identify the aspects and procedures that constitute follow-up under the IAA; and
- describe follow-up programs for surface and groundwater during post-construction and operations periods.

26. Assessment summary and summary tables

The proponent must prepare a stand-alone plain language summary of the Impact Statement in both of Canada's official languages (French and English). The summary must contain sufficient details for the reader to understand the project, any potential environmental, health, social and economic effects, potential adverse impacts on Indigenous peoples, proposed mitigation measures, residual effects and any required follow-up programs.

The Assessment Summary provides an opportunity for the proponent to demonstrate the correspondence between issues raised during the Planning Phase and issues addressed in the assessment. This Summary should be presented by VC, which allows the proponent to demonstrate the completeness of the assessment and provide the results of the analysis. The summary must include key maps or figures illustrating the project location and key project components.

The Impact Statement should also include a series of tables summarizing the following information:

- potential environmental, health, social and economic effects and the potential impacts on Indigenous peoples;
- potential mitigation and enhancement measures in relation to potential effects and impacts;
- a characterization of the residual effects of the project according to the selected criteria;
- cumulative effects and proposed mitigation measures to address them;
- any other commitments made by the proponent or recommendations made by the proponent to other parties; and
- effects falling within an area of federal jurisdiction as well as direct or incidental effects and the extent to which they are significant. According to the IAA, effects that fall under federal jurisdiction are as follows:



- (a) change to the following components of the environment that are within the legislative authority of Parliament:
 - (i) fish and fish habitat, as defined in subsection 2(1) of the *Fisheries Act*;
 - (ii) aquatic species, as defined in subsection 2(1) of the *Species at Risk Act*; and
 - (iii) migratory birds, as defined in subsection 2(1) of the *Migratory Birds Convention Act, 1994*.
- (b) a change to the environment that would occur:
 - (i) on federal lands,
 - (ii) in a province other than the one where the physical activity or the designated project is being carried out, or
 - (iii) outside Canada;
- (c) with respect to the Indigenous peoples of Canada, an impact — occurring in Canada and resulting from any change to the environment — on:
 - (i) physical and cultural heritage,
 - (ii) the current use of lands and resources for traditional purposes, or
 - (iii) any structure, site or thing that is of historical, archaeological, paleontological or architectural significance; and
 - (iv) any change occurring in Canada to the health, social or economic conditions of the Indigenous peoples of Canada.

According to the IAA, direct or incidental effects are defined as “effects that are directly linked or necessarily incidental to a federal authority’s exercise of a power or performance of a duty or function that would permit the carrying out, in whole or in part, of a physical activity or designated project, or to a federal authority’s provision of financial assistance to a person for the purpose of enabling that activity or project to be carried out, in whole or in part”.

27. Part 2 – Reference documents

Atmospheric, acoustic and visual environment

ISO 12913-1:2014 Acoustics—Soundscape—Part 1: Definition and conceptual framework. International Organization for Standardization. (2014). Available at

<https://www.iso.org/cms/render/live/en/sites/isoorg/contents/data/standard/05/21/52161.html>

Best Practices for the Reduction of Air Emissions From Construction and Demolition Activities. Cheminfo Services Inc. (2005). Available at <http://www.bv.transports.gouv.qc.ca/mono/1173259.pdf>

Environmental Code of Practice for the Measurement and Control of Fugitive VOC Emissions from Equipment Leaks. Canadian Council of Ministers of the Environment (CCME). (1993). Available at https://www.ccme.ca/files/Resources/air/emissions/pn_1106_e.pdf

Les intoxications au monoxyde de carbone et les travaux de sautage: Guide de pratiques préventives 2012. Gouvernement du Québec. (2012). Available at

<https://publications.msss.gouv.qc.ca/msss/fichiers/2011/11-203-03F.pdf>

Birds, migratory birds and their habitat

Atlas of the Breeding Birds of Ontario. Available at <http://www.birdsontario.org/atlas/maps.jsp?lang=en>.

Audubon Christmas Bird Count. Audubon. Available at

<http://netapp.audubon.org/CBCObservation/Historical/ResultsByCount.aspx>

Avoiding harm to migratory birds. Environment and Climate Change Canada. Available at

<https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds.html>

Barker, R. J., Schofield, M. R., Link, W. A., Sauer, J. R. 2018. *On the reliability of N-mixture models for count data*. *Biometrics*, 74(1), 369–377. Available at <https://doi.org/10.1111/biom.12734>

Bird Conservation Regions and strategies. Environment and Climate Change Canada. Available at

<https://www.canada.ca/en/environment-climate-change/services/migratory-bird-conservation/regions-strategies.html>

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Canadian Migration Monitoring Network (CMMN). Birds Canada. 2019. Available at

<https://www.birdscanada.org/bird-science/canadian-migration-monitoring-network-cmmn/>

eBird Canada. Available at <https://ebird.org/canada/home>



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Hanson, A., Goudie, I., Lang, A., Gjerdrum, C., Cotter, R., Donaldson, G. 2009. *A Framework for the Scientific Assessment of Potential Project Impacts on Birds*. Technical report series No. 508. Environnement Canada – Canadian Wildlife Service. Available at http://publications.gc.ca/collections/collection_2010/ec/CW69-5-508-eng.pdf

iNaturalist. Available at <https://www.inaturalist.org/>

Milko, R. 1998. *Migratory birds environmental assessment guideline*. Environment Canada – Canadian Wildlife Service. Biodiversity Protection Branch. Available at <http://publications.gc.ca/site/fra/9.647049/publication.html>

North American Breeding Bird Survey Website - Results. Available at <https://wildlife-species.canada.ca/breeding-bird-survey-results/P001/A001/?lang=e>

NatureCounts. Birds Canada, Avian Knowledge Network. Available at <https://www.birdscanada.org/birdmon/default/searchquery.jsp>

Nesting Calendar Query Tool. Birds Canada. Available at <https://www.birdscanada.org/apps/rnest/index.jsp>

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28. Part 2 – Appendix 1: Assessment of upstream greenhouse gas emissions

The upstream GHG assessment should be presented in a separate report and include two parts, Part A and Part B as described below.

Part A

Part A of the Upstream GHG Assessment must provide an estimate of GHG emissions associated with the upstream activities of the proposed project. The estimate of GHG emissions should:

- include upstream GHG emissions that would occur in Canada and in other countries in CO₂ equivalent on an annual basis for the operational life of the proposed project (upstream GHG emissions that would occur in Canada and in other countries must be reported separately);
- be based on the maximum capacity of the project;
- relate to all processes upstream of the proposed project, including, but not limited to, the production, processing and transportation of natural gas supply; and
- use verifiable emission intensities that are recent and relevant to the region and that reflect the sources of products that are expected to be received from the project, with realistic scenarios representing various sources of natural gas supply. Justification must be provided for the selection of these emission intensities.

All assumptions for the estimation must be stated and justified.

Part B

Part B of the Upstream GHG Emissions Assessment should present a qualitative discussion of the incremental effect of the upstream GHG emissions estimated in Part A. It should describe the conditions under which the upstream emissions estimated in Part A could occur whether or not the project proceeds.

- This discussion uses technical and economic information to estimate upstream natural gas production under various market and infrastructure assumptions. It also discusses (i) the potential impact of upstream GHG emissions associated with the project on Canada's overall GHG emissions and (ii) how additional natural gas production could affect global GHG emissions. This section includes a review of scenarios to compare results that depend on project implementation. For example, the results of upstream production in a scenario where the project does not proceed should be examined in relation to at least one scenario where the project does proceed.
- The term "additional" is used to refer to upstream production (and resulting emissions) that would occur solely as a result of the project.
- In general, when a project represents a new source of demand for upstream natural gas production or represents the only means of transporting upstream production, then it is expected to result in



additional upstream production and GHG emissions. However, for upstream sources with alternative transportation options, upstream production and GHG emissions associated with a project may not increase.

- The relationship between production and emissions in Canada must also be assessed, including how proposed and existing GHG policies could affect upstream emissions intensity over time, and how additional upstream emissions are consistent with current GHG projections and policies. In terms of impacts on global emissions, incremental upstream production in Canada would result from a combination of shifting production and its emissions from elsewhere and increasing the total amount of production.

29. Part 2 – Appendix 2: Environment and Climate Change Canada’s suggested approaches to standardized design and development of a songbird survey plan

The following approach is recommended to be applied at the scale of the Project Area and the Local Study Area for large-scale linear projects, such as the Gazoduq Project.

The approaches and tools suggested in this appendix should be considered for the preparation of the songbird survey plan.

SURVEY TRANSECTS AND SITES

- Survey transects should be spaced every 4 km along the pipeline and oriented perpendicular to the route, and the midpoint of each transect should be located on the pipeline’s axis. The location of transects may be adjusted to make them representative of all habitat types in the project area or for accessibility. For example, a transect could be relocated to cover less common wetland habitat. A length of approximately 1 km should allow sampling of most habitat types.
- Based on the foregoing, each 100 km section of the pipeline should have 25 transects. Of these, 10 transects should be sampled using automated sound recorders or sound level meters (sound level meter transects) and 15 transects should be sampled by ornithologists (observer transects). A different proportion of sound level meter transects may be appropriate, but justification should be provided.
- Survey sites along the transects may be located as follows:
 - Sound level meter transect: Sound level meters are used to estimate site use by birds for various dates and at various times of day. Because sound level meters are capable of collecting bird data over a wide range of dates and times, sampling can be conducted at a subset of sites in the transects. This subset should include one site on the pipeline axis (Project Area) and at least one other site located 500 m away in the Local Study Area. An additional site should be placed on the opposite side 500 m from the pipeline route to provide a representative sampling of habitat diversity along the transect. The exact distance of the site(s) within the Local Study Area should be determined on the basis of what is most appropriate for the type of habitat to be sampled in the Local Study Area, but the sites should be located at least 250 m from the pipeline route. The additional sites should be located in less common habitats, such as deciduous forests, scrublands and the various types of wetlands.
 - Observer transect: One site on the pipeline axis (Project Area) and at least two other sites in the Local Study Area, either 250 m on each side of the route, or 250 m and 500 m away from the route on one side. Additional sites should be placed 250 m and/or 500 m away to provide a

representative sampling of habitats in the Local Study Area along the transect. The additional sites should be located in less common habitats, such as deciduous forests, scrublands and the various types of wetlands. A 1 km transect should therefore have two or three survey sites when sound level meters are used and three to five survey sites when observers are conducting the survey.

- Project components located in the Local Study Area, other than the pipeline (Project Area), must also be sampled. Linear components (e.g. access roads) must be surveyed using transects as outlined above. Non-linear components such as compressor stations should be surveyed using a grid of sites spaced 250 m apart (or 500 m apart for sound level meter surveys) and be sufficient to cover the project component plus a 500 m buffer zone. As with transect lengths, changing the width of the buffer zone to a minimum of 250 m may be justified if the land cover analysis shows no change in land cover classification with increased buffer zone width.

SAMPLING OF BIRDS

Transects carried out by sound level meters:

- During each sampling year, sound level meters should be deployed at sites for as long as possible to cover spring migration, nesting, fall migration and the winter period. These periods should be determined on the basis of the species and the part of the study area according to recent scientific literature. It is important to maximize battery and sound card capacity during deployments.
 - A subset of at least 50% of the sound level meter sites should have sound level meters installed during the periods when the sites are used by birds, i.e. collectively including fall and winter recordings. A habitat representativeness analysis must be carried out to ensure that the subset of sites covered by winter surveys is an unbiased sample of the population of the sound level meter sites.
 - Sound level meter deployments for recording breeding should be set to record daily or every other day, and in stereo mode, with a morning and evening schedule. Recording should be done in two phases to avoid single recordings stretching over two days. Phase 1 starts at 00:00 (HH:MM), with 3 minutes of recording followed by a 12-minute break until five hours after sunrise (i.e. SR + 5 hrs). Phase 2 begins 30 minutes before sunset, with 3 minutes of recording followed by a 12-minute break until 23:56 (HH:MM).
 - The sound level meters (automatic recorders) should be programmed to record using a sampling frequency of 44.1 kHz.

Observer transects:

- Each site should be sampled by ornithologists during a standardized 10-minute point count. To ensure that comparisons can be made between observer counts and recordings, observers must also record their visit using a high-quality portable recording device (i.e., with 360-degree recording in WAV format, selectable sampling frequency and adjustable microphone gain) and mounted on a device allowing to keep it in place without being held by the observer (e.g. a tripod with wrap-around joints to attach it to objects of all kinds, especially branches). Observers must be proficient in identifying birds by sight and sound and must use one-minute intervals within the 10-minute point count period, so that each individual bird is recorded within the first one-minute interval after it is detected. When the bird is first

detected, the estimated distance between the observer and the bird shall be assessed based on three distance categories: “0 to 50 m”, “50 to 100 m”, and “more than 100 m”.

GEOMATICS AND HABITAT TYPE

- For each site visited from June 10 to August 30, 13 photos must be taken. At each cardinal point, take one shoulder-high photo with the arm and the camera parallel to the ground (a representation of the horizontal complexity of the canopy), one photo with the arm pointing down at a 45-degree angle from the body (a representation of the ground), and one photo with the arm pointing up at a 135-degree angle from the body (a representation of the vertical complexity of the canopy). Then, take a photo with the arm extended upward (a representation of the closing of the canopy).
- The photos must be interpreted by qualified individuals as accurately as possible based on habitat data derived from the “Land Use” layer provided by the Ministère du Développement durable, de l’Environnement et de Lutte contre les changements climatiques (Bissonnette, Demers and Lavoie 2016).
- During the development of the survey plan, a 100 m buffer zone should be drawn around the centroid of the selected survey site, and the cover percentage for each land cover class should be determined. These values can be used as inputs for the representativeness assessments and the survey plan modification options.

ANALYSIS OF THE ACOUSTIC FILES AND DATA

- The acoustic files must be analyzed by interpreters skilled in identifying birds by sound and familiar with the bird communities in the sampled area. The acoustic data is to be interpreted using the Wildtrax interface (<https://www.wildtrax.ca/home>). Each individual detected is recorded as a data point and referenced at the first minute of the detection interval.
- Prior to interpretation, acoustic files that are suitable for analysis must be identified by examining the spectrograms and listening to a short segment of the recording. Files containing significant noise that limits the ability to hear birdsongs are to be excluded (e.g. intense noise between 1,000 and 10,000 Hz due to wind, rain, amphibians or anthropogenic sources).
- From the set of appropriate breeding season recording files, select one three-minute segment per week recorded at night, two three-minute segments per week recorded in the morning, and one three-minute segment per week recorded at dusk. The selection must be made by picking randomly a day of the week and a time in the recording period. Night is defined as the period between astronomical sunset and sunrise (e.g. at the latitude of Quebec City, between June 10 and August 30, it is possible to sample at night between midnight and 2 am; morning one hour before to five hours after sunrise (i.e. the time of day when the edge of the solar disc appears on the horizon); and dusk, 30 minutes before to two hours after local sunset (i.e. the time of day when the edge of the solar disc disappears from the horizon).
- From the set of appropriate fall and winter recording files, select randomly from a time and a day per week: three three-minute segments per week recorded in the morning (i.e. one hour before to five hours after sunrise).

- The methods used to analyze the data must: be described in a clear and transparent manner, with annotated text for example; extract the maximum amount of information from the data; and be appropriate for the data and the protocols.
- Generalized linear mixed models or appropriate alternatives (e.g. regression trees, generalized additive models, or models developed using a Bayesian approach) may be suitable for analyzing the data obtained from the proposed survey plan to permit generalization across the study area.
- Estimates of relative abundance are strongly influenced by the detectability of birds, which varies according to, among other things, the species, the date and time of the survey, the particular conditions of a site, the sampling effort and the ability of the ornithologist to identify the sounds. The probability of detection of the species should therefore be established and considered in the analyses. Corrective measures may be used to adjust the estimates of site occupancy by each species according to the probability of detection (see for example Mackenzie et al., 2002 and Desrochers and Drolet, 2017).

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30. Part 2 – Appendix 3: Preliminary list of species at risk that may use the project study area and local study area

English name	French name	Scientific name
Plants		
Anticosti Aster	Aster d'Anticosti	<i>Symphotrichum anticostense</i>
Insects		
Monarch	Monarque	<i>Danaus plexippus</i>
Reptiles		
Wood Turtle	Tortue des bois	<i>Glyptemys insculpta</i>
Blanding's Turtle	Tortue mouchetée	<i>Emydoidea blandingii</i>
Snapping Turtle	Tortue serpentine	<i>Chelydra serpentina</i>
Birds		
Harlequin Duck	Arlequin plongeur	<i>Histrionicus histrionicus</i>
Red Knot rufa subspecies	Bécasseau maubèche de la sous-espèce rufa	<i>Calidris canutus rufa</i>
Eastern Whip-poor-will	Engoulevent bois-pourri	<i>Antrostomus vociferus</i>
Common Nighthawk	Engoulevent d'Amérique	<i>Chordeiles minor</i>
Peregrine Falcon anatum/tundrius	Faucon pèlerin anatum/tundrius	<i>Falco peregrinus anatum/tundrius</i>
Barrow's Goldeneye	Garrot d'Islande	<i>Bucephala islandica</i>
Bobolink	Goglu des prés	<i>Dolichonyx oryzivorus</i>
Bicknell's Thrush	Grive de Bicknell	<i>Catharus bicknelli</i>
Wood Thrush	Grive des bois	<i>Hylocichla mustelina</i>
Evening Grosbeak	Gros-bec errant	<i>Coccothraustes vespertinus</i>



English name	French name	Scientific name
Short-eared Owl	Hibou des marais	<i>Asio flammeus</i>
Bank Swallow	Hirondelle de rivage	<i>Riparia riparia</i>
Barn Swallow	Hirondelle rustique	<i>Hirundo rustica</i>
Chimney Swift	Martinet ramoneur	<i>Chaetura pelagica</i>
Olive-sided Flycatcher	Moucherolle à côtés olive	<i>Contopus cooperi</i>
Canada Warbler	Paruline du Canada	<i>Cardellina canadensis</i>
Prothonotary Warbler	Paruline orangée	<i>Protonotaria citrea</i>
Least Bittern	Petit Blongios	<i>Ixobrychus exilis</i>
Red-headed Woodpecker	Pic à tête rouge	<i>Melanerpes erythrocephalus</i>
Eastern Wood-pewee	Pioui de l'Est	<i>Contopus virens</i>
Rusty Blackbird	Quiscale rouilleux	<i>Euphagus carolinus</i>
Yellow Rail	Râle jaune	<i>Coturnicops noveboracensis</i>
Eastern Meadowlark	Sturnelle des prés	<i>Sturnella magna</i>
Mammals		
Wolverine	Carcajou	<i>Gulo gulo</i>
Caribou	Caribou	<i>Rangifer tarandus</i>
Northern Myotis	Chauve-souris nordique	<i>Myotis septentrionalis</i>
Little Brown Myotis	Petite chauve-souris brune	<i>Myotis lucifugus</i>



Part 3 – Tailored Impact Statement Guidelines – Requirements specific to the *Canadian Energy Regulator Act*

1. Requirements under the *Canadian Energy Regulator Act*

The Guidelines have been developed to consolidate both the *Impact Assessment Act* (IAA) and the *Canadian Energy Regulator Act* (CER Act) information requirements. Part 3 sets out the CER Act requirements.

For projects regulated by the Canada Energy Regulator (CER), proponents should refer to relevant CER guidance (see “Part 3 – Reference documents”). The proponent can also consult the CER Filing Manual for clarification of the requirements in this part of the Guidelines.

If there are conflicting information requirements between CER guidance and the Guidelines, the requirements of the Guidelines take precedence on matters related to the IAA.

2. Action requested

2.1. Goal

The Impact Statement describes the project being proposed and what action is being requested of the CER.

2.2. Filing requirements

The information that an Impact Statement must include is set out in section 15 of the [National Energy Board Rules of Practice and Procedure, 1995](#).

“15.(1) *Every application shall*

- (a) *contain a concise statement of the relevant facts, the provisions of the Act or any regulations made under the Act under which the application is made and the nature of, and justification for, the decision or order sought;*

- (b) contain, in addition to the information that is required by the Act and any regulations made under the Act, any other information that explains or supports the application, including information referred to in published policies and guidelines of the CER; and
- (c) set out the name, address, telephone number and any other telecommunications numbers of the applicant and the applicant's authorized representative, if any.

(2) Every application shall be divided into consecutively numbered paragraphs, each of which shall be confined as nearly as is practicable to a distinct portion of the subject-matter of the application.”

2.3. Guidance

The proponent must, in addition to looking at the CER Filing Manual, have regard to the CER Act and regulations relevant to the filing for direction on what needs to be included.

3. Management systems and programs under the *Canadian Energy Regulator Onshore Pipeline Regulations*

3.1. Goal

To demonstrate how the proponent's management system required under the *Canadian Energy Regulator Onshore Pipeline Regulations* (OPR) will support and achieve adequate safety and environmental protection in the context of the current project's Impact Statement.

3.2. Filing requirement

The proponent must provide:

- i. an overview of its management system, including a description of:
 - a. how programs required under the OPR are coordinated within the management system to promote safety and environmental protection; and
 - b. the process for any necessary modifications to the management system.

3.3. Guidance

The CER conducts ongoing reviews of proponent management systems and compliance with the requirements of the OPR through its auditing oversight. However, in addition to this, it is important for public transparency and clarity that proponents explain how safety and environmental protection are integrated, coordinated and controlled within their management systems and will be ensured for any proposed new facility.

A carefully-designed and well-implemented management system supports a strong culture of safety and is fundamental to keeping people safe and protecting the environment. Sections 6.1 to 6.6 of the OPR detail the required elements of the proponent's management system. It must be a systematic approach designed to effectively manage and reduce risk through necessary organizational structures, resources, accountabilities, policies, processes and procedures, and must include measures to evaluate effectiveness and promote continual improvement.

A proponent's management system must also coordinate the following five programs:

- Emergency Management Program to ensure appropriate emergency preparedness and response (OPR section 32);
- Integrity Management Program to ensure the pipeline system continually operates within its design parameters (OPR section 40);
- Safety Management Program to protect workers and the public from occupational and process hazards (OPR section 47);
- Security Management Program to protect people, property and the environment from malicious damage (OPR section 47.1); and
- Environmental Protection Program to avoid or reduce adverse effects on the environment (OPR section 48).

Section 6.5 of the OPR lists a number of processes and requirements that must be part of the proponent's management system and each of the above five programs.

Section 6.2 requires the appointment of an Accountable Officer and that their name and acceptance of responsibilities be filed by the proponent. For further information on the OPR and related supporting documentation, please refer to the CER's website.

A proponent's management system apply to the entire lifecycle of a project, from planning and design, through construction and operation, to abandonment. It is therefore relevant at all stages of a project, including the Impact Statement stage.

The proponent must have applied relevant components of its management system and programs to the planning and design of the project and related Impact Statement documents, and to have reviewed those components for necessary modification in the event the project goes ahead.

An Impact Statement that is lacking (such as containing an incomplete discussion of hazards, risks and controls) might indicate that the proponent's management system and program components are



inadequate. The proponent must prevent such deficiencies, correct any that are identified, avoid similar deficiencies in the future, and to apply lessons learned as broadly as possible.

4. Notification of commercial third parties

4.1. Goal

The Impact Statement must include evidence that all interested commercial third parties who may be affected by the outcome of the impact assessment have been notified of the development of the Impact Statement.

4.2. Filing requirements

- i. Confirm that all commercial third parties that may be affected by the outcome of the impact assessment have been notified, and include:
 - a. a description of the method used to notify these parties;
 - b. the date these parties received the notification.
- ii. Provide details regarding the concerns raised by third parties. For example:
 - a. confirmation that none of them have raised concerns;
 - b. confirmation that the concerns raised have been resolved;
 - c. a list of commercial third parties that have outstanding concerns and a statement of their unresolved concerns.
- iii. List the self-identified interested third parties and confirm that they have received notification.
- iv. Provide an explanation in the event that notification of commercial third parties was not deemed necessary.

4.3. Guidance

4.3.1. Identification of commercial third parties

Commercial third parties include those that would be directly or indirectly affected by the outcome of the impact assessment. This would be mandatory for shippers and potentially include commodity suppliers, end users and other pipelines. The following are some examples of cases where some commercial third parties are affected by the outcome of an impact assessment:

- i. all shippers need to be notified of all applications for tolls and tariffs filed under Part 3 of the CER Act and any applications that could have a significant impact on tolls and tariffs;
- ii. all shippers, suppliers and users will be affected if the outcome of the impact assessment significantly affects the service provided by the pipeline; and
- iii. operators of competing facilities, whether or not they are regulated by the CER, will be affected commercial third parties where it is reasonable to believe that the outcome of the impact assessment will have a significant adverse effect on their operation.

Third parties involved with physical construction activities (e.g. contractors, material vendors, consultants) or who that supply food and accommodation services are not normally considered to be affected commercial third parties.

4.3.2. Notification

Inform the commercial third parties that the Impact Statement has been or will be submitted to the Agency and provide a brief description. Notification should normally occur no later than the date the Impact Statement is filed. A copy of the Impact Statement may be provided at the same time as the notification, be provided upon request, or may constitute notification.

When determining the level of detail of the notification, consider the following factors:

- i. scope of the project;
- ii. potential impact on commercial third parties;
- iii. nature of any concerns raised by commercial third parties; and
- iv. resolution of concerns raised.

In general, the greater the scope of the project and potential impact on commercial third parties, the more information would be required. In addition, more detailed information will normally be required when concerns have been raised by commercial third parties and remain unresolved at the time of filing.

Where the outcome of the impact assessment may affect certain commercial third parties, notify the individual parties. If, however, a group with common interests could be affected, such as western Canada producers or a group of end-users, the proponent may choose to notify a recognized organization representative of the group, such as the Canadian Association of Petroleum Producers or the Industrial Gas Users Association.

4.3.3. Concerns

Where concerns have been raised and resolved, include a discussion of the resolution. When providing the list of unresolved concerns, provide any other information that will help the understanding of the issues, including a description of the efforts made to reach an agreement, such as a summary of the consultation process that was used before the Impact Statement was submitted.



4.3.4. Self-identified, interested third parties

Self identified, interested third parties refers to third parties who have indicated to the proponent that they have an interest in the impact assessment or in one or more types of applications filed with the CER.

Whether any commercial third parties may or may not be affected by the outcome of the impact assessment, the proponent must notify all self-identified, interested third parties.

5. Measurement, conversion factors and commodity description

5.1. Measurement and conversion factors

Where possible, the information within the Impact Statement should be presented in the International System of Units (SI), although it is helpful to include the imperial equivalent as well.

The following conversion factors should be used:

- millimetre (mm) = 0.0394 inches (in)
- metre (m) = 3.28 feet (ft)
- kilometre (km) = 0.62 miles (mi)
- cubic metre (m³) = 35.3 cubic feet (cf)
- cubic metre (m³) = 6.29 barrels (bbl)
- kilopascal (kPa) = 0.145 pound per square inch (psi)

If other conversion rates are used, indicate this fact and provide the rates used.

5.2. Commodity description

For natural gas volumes, market requirements, estimates of reserves, and productive capacity estimates will be at a temperature of 15°C and an absolute pressure of 101.325 kPa. Gas composition should be expressed in mole percent, and the heating value of the gas should be expressed in megajoules per cubic metre (MJ/m³). Volumes are requested to be in metric units as cubic metres (m³) and production rates as cubic metres per day (m³/d). The imperial equivalent would be cubic feet (cf) and cubic feet per day (cf/d) respectively.



6. Technical matters

6.1. Engineering design details

6.1.1. Goal

The Impact Statement includes all necessary design details of the proposed project to give an understanding of the nature of the proposed project.

6.1.2. Filing requirements

- i. Describe the fluid type and chemical composition.
- ii. If the project has piping, provide the following information:
 - a. pipe outside diameters;
 - b. pipe material types and grades;
 - c. pipe wall thicknesses;
 - d. maximum operating pressures (MOP);
 - e. estimate of pipe length by province for each change in diameter, material grade and wall thickness
 - f. valve spacing and a map showing valve locations;
 - g. minimum depth(s) of cover and typical drawings (crossings, etc.);
 - h. class locations;
 - i. description of proposed pipe coatings; and
 - j. general description of the corrosion control elements and facilities.
- iii. If the project involves pigging facilities, provide the following information:
 - a. pipe outside diameters;
 - b. pipe material types and grades
 - c. pipe wall thicknesses;
 - d. MOP;
 - e. pig trap locations;
 - f. pig trap pressure ratings;
 - g. a description of the pig trap closure device; and
 - h. a general description of the corrosion control elements and facilities
- iv. If the project involves compressor facilities, provide:
 - a. pipe outside diameters;
 - b. pipe material types and grades;



- c. pipe wall thicknesses;
 - d. MOP and inlet and outlet design pressures;
 - e. an indication of the presence of surge control systems;
 - f. type and power of compressor units;
 - g. fuel type and source for compressor units;
 - h. a station schematic showing buildings and all major piping and valves including connections to existing pipeline systems;
 - i. a plot plan of the facility including the location of roads and fences;
 - j. description of pressure vessels;
 - k. a general description of the corrosion control elements and facilities and overpressure control; and
 - l. a general description of the pressure control and overpressure protection devices.
- v. If the project involves pressure regulating or metering facilities, provide:
- a. a description of the gas or fluid analysis system;
 - b. minimum and maximum station flows and associated inlet and outlet pressures;
 - c. a general description of the pressure control and overpressure protection devices;
 - d. a description of the type and frequency of H₂S analysis in the inlet gas stream;
 - e. a station schematic showing buildings and all major piping and valves including connections to existing pipeline systems;
 - f. a plot plan of the facility including the location of roads and fences;
 - g. pipe outside diameter;
 - h. pipe material type and grade;
 - i. pipe wall thickness;
 - j. MOP;
 - k. a general description of the corrosion control elements and facilities; and
 - l. if the measurement is being done for custody transfer purposes, include a description of the measurement equipment, including:
 - physical size;
 - flow capacity;
 - measurement accuracy;
 - meter type;
 - number of meters; and
 - proving method.
- vi. If the project involves new control system facilities for a pipeline, plant or station, provide:
- a. a basic description of the supervisory control and data acquisition (SCADA) system related to the proposed facility, including the parameters monitored;

- b. a basic description of the leak detection system including its sensitivity and accuracy; and
 - c. a basic description of the emergency shut down system.
- vii. If the project involves facilities not mentioned above, provide a technical description of the proposed facilities that includes an equivalent level of information to that listed above.
- viii. If the project involves a building, include the building's use and dimensions.

6.2. Engineering design principles

6.2.1. Goal

The Impact Statement includes information on the engineering codes, standards and regulations applicable to the project as well as information with respect to any special engineering design challenges associated with the project.

6.2.2. Filing requirements

- i. Confirm project activities will follow the requirements of the latest version of Canadian Standards Association Standard Z662, Oil and Gas Pipeline Systems (CSA Z662).
- ii. If the project uses any of the Annexes, in whole or in part, that form part of CSA Z662, provide a statement indicating which Annex is being used and for what purpose.
- iii. If any portion of the project involves a hydrocarbon pipeline, provide a statement confirming compliance with the latest version of the OPR or the *Canadian Energy Regulator Processing Plant Regulations* (PPR).
- iv. Provide a listing of all primary codes and standards, including the version and date of issue that will be followed in the design, material selection, construction, operation and maintenance for each element of the applied-for facility, including:
 - a. pipe;
 - b. coatings;
 - c. valves;
 - d. fittings;
 - e. cathodic protection systems;
 - f. compressors;
 - g. regulators and control valves;
 - h. pressure vessels (including certifying authority used or required);
 - i. electrical systems;
 - j. Supervisory Control and Data Acquisition (SCADA) system;
 - k. pressure control and overpressure protection;
 - l. leak detection; and

m. buildings.

Where there is a choice in the code or standard selected, provide a brief reason why the referenced code or standard is considered the appropriate code.

- v. Provide a statement that the proponent commits to carry out the project in accordance with all relevant proponent manuals and that the manuals in question comply with:
- a. the OPR, if applicable;
 - b. the PPR, if applicable; and
 - c. the codes and standards for the project.

Keep the latest versions of these manuals available for Commission audit and file copies upon request.

- vi. If the proposed facility will be subject to conditions not specifically addressed in CSA Z662 (e.g., seismic issues, fracture control, slope instability, pipe buoyancy, or lack of support due to streambank erosion) provide:
- a. written statement from a qualified professional engineer that the project has been assessed and designed for the potential effects of the condition that is not specifically addressed in CSA Z662; and
 - b. a description of the designs and measures required to safeguard the pipeline.
- vii. If the proposed project involves horizontal directional drilling, provide:
- a. a preliminary feasibility report detailing the assessment that was completed to determine that horizontal directional drilling could be successfully completed; and
 - b. a description of the contingency plan to be used if the horizontal directional drill is not successful.
- viii. If the proposed project involves new materials, provide, in tabular format, material supply chain information (e.g., forming and manufacturing locations) and the associated Quality Assurance verification activity.
- ix. If the proposed project involves the reuse of materials, provide an engineering assessment in accordance with CSA Z662 that indicates its suitability for the intended service.

6.3. Onshore Pipeline Regulations

6.3.1. Goal

The Impact Statement meets the requirements of the OPR.

6.3.2. Filing requirements

- i. If any portion of the project involves a hydrocarbon pipeline system requiring development of designs, specifications, programs, manuals, procedures, measures or plans for which no standard is set out in the OPR, provide copies to the review panel for approval. [OPR, subsection 5.1(1)].

- ii. If the project design is non-routine in nature or must incorporate unique challenges because of its geographical location (e.g., sub-sea pipelines; pipelines located north of the 60th parallel; pipelines transporting sour gas, acid gas or high vapour pressure products; or pipelines operating under any extreme or unusual circumstances), provide a quality assurance (QA) program outlining the actions required to ensure the materials purchased for use in the proposed facility are appropriate for their intended service (OPR, section 15). See the Guidance topic below for further details.

6.3.3. Guidance – Quality assurance program for materials

The QA program in the above filing requirement ensures that materials purchased meet the proponent's specified requirements. The rigor of the QA program should be consistent with the scale of the purchase order and its intended application (e.g., the purchase of a single small diameter fitting would not warrant the same degree of scrutiny as would a major pipeline construction project).

QA programs can include the elements of a recognized standard such as the International Organization for Standardization (ISO) 9000 series, and, where appropriate:

- i. requirements for the pipeline proponent's (or its agents) evaluation of the manufacturer's or supplier's quality management system prior to the award of any contract;
- ii. requirements for proponent (or its agents) audits and inspections during manufacture and fabrication, shipping, storage, etc.;
- iii. requirements for random and progressive product testing;
- iv. inspection procedures and inspector qualifications;
- v. requirements for handling and review of documentation;
- vi. a system for managing non-conformances to specifications; and
- vii. procedures for proponent acceptance of products.

6.4. Emergency Management

6.4.1. Goal

The Impact Statement includes information on potential emergencies associated with the construction and operation of the proposed project to give an understanding of the risks of incidents that might be generated by the project. Moreover, the Impact Statement includes information that demonstrates that the elements of emergency management have been considered in an integrated, comprehensive, proactive and systematic manner.

6.4.2. Filing Requirements

The Impact Statement must:

- i. Describe the considerations used in the development of the proponent's Emergency Management Program, including the following:
 - a. An analysis of the different factors (natural, technological and anthropogenic) that pose a risk to the proposed project and that can result in an emergency. In consideration of the fluid to be transported, this should include the identification of the emergency planning zone (EPZ). The risk analysis for the proposed project will be conducted in consultation with other public and private organizations, such as Emergency Management departments and companies responsible for critical infrastructure. This will assist in determining whether non-project related hazards, such as a power outage or forest fire, could have an impact on the overall risk assessment.
 - b. The necessary consultation of the public, Indigenous peoples and the municipal, provincial and federal authorities that have responsibilities within the EPZ of the proposed project: achieved following the engagement activities described in sections 4 and 5 of Part 2.
- ii. Describe the methodology for identifying and evaluating the potential risks of incidents associated with the project that can result in an emergency.
- iii. Describe the types of emergencies that could result from the proposed project during construction and operation phases.
- iv. Describe how the potential impacts of an emergency will be identified and evaluated for response planning purposes.
- v. Describe how agencies that may be involved in an emergency response on the proposed project will be consulted for the development and refinement of the proponent's Emergency Procedures Manual.
- vi. Describe how an emergency associated with the project will be managed in a coordinated way considering the emergency management, legal and operational frameworks in force, and the most recent emergency response plans of indigenous, municipal, provincial and federal concerned organizations.
- vii. Describe how the proposed emergency response structure of the proponent aligns with the *Emergency Management Framework for Canada*.
- viii. Describe how all appropriate parties will be made aware of the potential emergency situations on the proposed project and their specific roles and responsibilities.
- ix. Describe how liaison will be established and maintained with agencies that may be involved in an emergency response on the proposed project.
- x. Provide a description of the continuing education program for police, fire departments, medical facilities, other appropriate organizations and agencies and the public residing adjacent to the proposed project.
- xi. Demonstrate an understanding of the response measures, potential emergency response times and resources required in the event of an emergency associated with the project.
- xii. Describe the emergency response exercise program that would be applied to the proposed project.

6.4.3. Guidance

Information submitted on emergency management matters should demonstrate that the level and detail of response planning is adequate given the level of risk of an emergency associated with the project.

The level of detail should be based on the following elements:

- i. potential effects on human safety;
- ii. potential effects on the environment;
- iii. potential effects on critical infrastructure; and
- iv. the applicable provisions of the ISO 14000 series standards, CSA Z662 and CSA Z246.2 standards.

7. Economic and financial issues

Economic information must include details on:

- supply;
- transportation;
- markets; and
- financing.

The overall goal of submitting facility economic information is to demonstrate that the proposed facilities will be used and useful, that demand charges will be paid, and sufficient funds will be available for abandonment. Additionally, information is required to demonstrate how the proposed facilities might impact existing domestic markets for natural gas.

7.1. Supply

7.1.1. Goal

The Impact Statement includes information indicating that there is or will be adequate supply to support the use of the pipeline, taking into account all potential supply sources that could reasonably be expected to be sourced by the project's facilities over their expected economic life.

7.1.2. Filing Requirements

Provide:

- i. a description of each commodity (i.e. natural gas for this project);
- ii. a discussion of all potential supply sources;
- iii. a forecast of the productive capacity for natural gas over the economic life of the facilities; and



- iv. for pipelines with contracted capacity, a discussion of the contractual arrangements underpinning the supply.

7.1.3. Guidance

When determining what level of supply information to provide, be aware that the proponent needs to demonstrate that there is, or will be, an adequate supply available to the pipeline such that it could be expected to be used at a reasonable level over its economic life and would be in the public interest.

The level of detail to be provided should be based on the following elements:

- i. capacity or throughput;
- ii. the nature and complexity of the source of supply; and
- iii. potential effects on the public interest, commercial or otherwise.

In general, the higher the capacity or expected throughput, the more information on the supply is required. Projects that have more significant potential effects on third parties or the environment may require additional information to demonstrate that the project is in the public interest.

7.1.3.1. Commodity Description

Describe each commodity (i.e. natural gas) that would be affected by the project's facilities. Adhere to the guidelines for describing commodities provided in section 5 of Part 3 "Measurement, conversion factors and commodity description".

7.1.3.2. Resources

Describe each current and potential supply source that the project's facilities are relying upon, including the methodology used to derive these estimates.

7.1.3.3. Productive capacity

Forecast the current and future production over the economic life of the project. Include forecasts from:

- i. various supply sources; and
- ii. conventional and unconventional production as well as production from other basins that could be sourced.

Clearly describe the sources for and the methodology used to derive the forecasts.

7.1.3.4. Contractual arrangements

For pipelines with contracted capacity, include a description of any relevant contractual arrangements underpinning the supply arrangements. Also include key contractual terms such as length of contract and volumes under contract, where available.

7.2. Transportation

7.2.1. Goal

The Impact Statement includes information indicating that the volumes to be transported are appropriate for the project's facilities and that the proposed facilities are likely to be utilized at a reasonable level over their economic life.

7.2.2. Filing requirements

7.2.2.1. Pipeline capacity

Provide a justification demonstrating that the capacity of the new pipeline is appropriate given the production or supply volumes that would supply the pipeline.

7.2.2.2. Throughput

- i. For pipelines whose capacity is contracted, provide information on the contractual arrangements that underpin the anticipated throughput.
- ii. For all other pipelines, provide forecasts of expected annual throughput of natural gas, receipt point and delivery point over the economic service life of the project's facilities.
- iii. Provide:
 - a. the theoretical and sustainable capacity of the planned facilities on a daily, seasonal and annual basis in relation to the anticipated needs, if any; and
 - b. the throughput data and calculation formulas used to determine the daily or hourly capacity, as applicable, of the proposed facilities, and the underlying assumptions and parameters, including a description of the properties of the gas.

7.2.3. Guidance

Information submitted on transportation matters must:

- i. demonstrate that the capacity of the project's facilities is appropriate for the commodities and volumes that would be transported in the pipeline; and
- ii. provide sufficient evidence that the project's facilities will be used at a reasonable level over their economic life.

Information on pipeline capacity, projected throughput or contracted volumes and, if applicable, supply available to the pipeline, could be provided in tabular format. Where it would provide clarity, a graphical representation could also be included.



7.2.3.1. Pipeline capacity

Provide an estimate of the average annual capacity of the pipeline for natural gas transported.

In all cases where there will be a substantial difference between pipeline capacity and contracted volumes or projected throughput, include an explanation of the difference.

In the case where the subject pipeline is one of a number of pipelines serving a particular supply area, provide a description of the overall service for the area and the role the subject pipeline plays in serving the area relative to throughput volumes and productive capacity for the supply area.

7.2.3.2. Contractual arrangements

Transportation agreement evidence is required.

Describe the contracted volume and term by shipper. When possible, submit evidence of the transportation agreements, such as signed execution sheets and copies of the contracts. Contractual evidence must be of sufficient detail to demonstrate that the facilities will be used at a reasonable level and that demand charges will be paid.

7.3. Markets

7.3.1. Goal

The Impact Statement includes information indicating that adequate markets exist for the incremental volumes that would be available to the marketplace as a result of the applied-for facilities, and includes information showing how the volumes could impact existing domestic natural gas markets.

7.3.2. Filing requirements

Provide:

- i. an analysis of the market in which natural gas is expected to be used or consumed;
- ii. a discussion of the physical capability of upstream and downstream facilities to accept the incremental volumes that would be received and delivered; and
- iii. an analysis of domestic natural gas markets that could be impacted by the volumes associated with the proposed facilities.

7.3.3. Guidance

Information on markets is required to demonstrate that there is sufficient demand to absorb the incremental volumes, that there is sufficient physical capability in the upstream and downstream facilities to accept the incremental volumes, and that the impacts on domestic natural gas markets are acceptable.



The level of detail will correspond to:

- i. the magnitude of the incremental volumes that would be delivered into the market;
- ii. the degree of competition from other supply areas and from other fuels in the market to be served; and
- iii. the potential impact on the public interest, commercial or otherwise.

Generally, the greater the projected increase in volumes delivered to the marketplace, the greater the amount of market information that would be required. Projects that have a larger potential impact on third parties or the environment may require filing additional information to demonstrate that the project is in the public interest.

7.3.3.1. Description of the market

Describe the market that will receive natural gas, including, where applicable:

- i. where the natural gas could be delivered (e.g., gas hub);
- ii. the potential competition to serve the market or the market areas from other pipelines;
- iii. energy sources; and
- iv. transportation systems.

7.3.3.2. Ability of upstream and downstream facilities to accept incremental volumes

Provide assurance that upstream and downstream connection facilities will be able to effectively accept additional volumes received or transmitted.

7.3.3.3. Potentially impacted domestic markets

Describe the domestic Canadian natural gas markets that could be impacted by the incremental volumes associated with the proposed facilities. Provide an analysis of potential impacts, including on availability of gas supply to these markets.

7.4. Financing and financial resources

7.4.1. Goals

The Impact Statement must include an assessment of:

- i. the proponent's ability to finance the proposed facilities;
- ii. how facilities are financed and the potential costs associated with risks and liabilities that may arise during the construction and operation of the project, including a significant incident (see the National Energy Board Event Reporting Guidelines for a definition of a significant incident);

- iii. any changes that the facility financing arrangements may have to the risk assumed by the proponent;
- iv. the estimated abandonment costs of the proposed facilities and the process and mechanism for setting aside funds to cover these costs; and
- v. the tolling of the proposed facilities.

7.4.2. Filing requirements

- i. Provide evidence that the proponent is able to finance the proposed facilities.
- ii. Demonstrate that the proponent can manage potential costs associated with risks and liabilities that may arise during the construction and operation of the project, including a significant incident involving a product release.
- iii. Provide the estimated tolls for the first five years of service of the facilities.
- iv. Confirm that shippers have been informed of the project and its tolls. Also provide a summary of their concerns, if any, and the proponent's plans to address them.
- v. Specify how the proponent will address financing for abandonment activities.

7.4.3. Guidance

The information provided should demonstrate that the project is financially sound given the toll methodology and that it is not being cross-subsidized in an inappropriate manner.

While the information identified in the filing requirements would be satisfactory in most instances, it may be necessary to provide further information. In general, more detailed information should be provided for projects that are greater in complexity and scope. Examples of factors that could affect the complexity and scope of a project include the:

- i. the size of the proposed facility tolls;
- ii. proposed toll design methodology;
- iii. level of market power held by the proponent, including its affiliates;
- iv. number of shippers on the system;
- v. number of third parties that could be affected by the proposed facilities and the level of effect on these parties; and
- vi. the financial risk assumed by the proponent.

Determine the level of information to include for each filing requirement based on the factors described above, and provide any additional information that would be pertinent.

7.4.3.1. Finance information

Evidence that the proponent has the ability to finance the proposed facilities should include, but not be limited to:

- i. a description of the intended methods and sources of financing the proposed facilities;
- ii. a description of any financing already in place; and
- iii. a description of any restrictive provisions concerning future financing, any changes in capital structure, the impact on interest coverage ratios and other factors that could affect the financing of the proposed facilities.

7.4.3.2. Ownership structure

- i. The proponent should describe the corporate structure, including at a minimum:
 - a. The corporate structure chart showing the proponent, its subsidiaries, owning entities and affiliates; and
 - b. A description summarizing each entity's ownership and the operating relationships with each other.
- ii. The chart referred to in a) and the description in b) must show, but need not be restricted to:
 - a. the ownership of each entity and their jurisdiction of incorporation or registration;
- iii. Where limited partnerships are involved, a description of:
 - a. the general and limited partners in each limited partnership; and
 - b. the respective roles and responsibilities of each of these entities in managing the limited partnerships, and operating the pipeline and related facilities.

7.4.3.3. Financial resources

The proponent must provide information on how it intends to support the management of potential costs associated with risks and liabilities during the construction and operation of the project, including a significant incident involving a product release. Any proponent authorized under the CER Act to construct or operate a pipeline must maintain financial resources equal to its absolute liability limit or an amount greater than that required by the CER's Commission. The CER requires such companies to obtain approval of their financial resource plans. If this approval is sought as part of the integrated review process, the proponent will be required to provide the information specified in the [Pipeline Financial Requirements Guidelines](#). In any event, the information submitted as part of the integrated review process should include the following elements.

The proponent should provide a description of the expected absolute liability limit and evidence supporting the calculation of the absolute liability limit (see section 3 of the Pipeline Financial Requirements Guidelines for information on how to calculate absolute liability limits).

The proponent should also provide a description of the various types and amounts of financial resources planned by the proponent, including readily accessible financial resources. This description should:

- i. Detail the planned financial resources and amounts for each type;
- ii. Explain how financial resources will enable the proponent to respond to a release;
- iii. Detail the expected or known terms and conditions of each planned financial resource or financial instrument (see Section 7.2 of the Pipeline Financial Requirements Guidelines for information);

- iv. Present the time required for access to each planned financial resource; and
- v. Demonstrate how the planned financial resources will enable the proponent to pay the applicable amount of absolute liability or an amount greater than that determined by the CER Commission or deemed adequate.

The proponent should also provide an analysis of whether the absolute liability limit represents an adequate amount of financial resources, or whether more should be maintained based on the potential cost of a hydrocarbon release. The analysis should take into account the risk assessment for the proposed facilities, and demonstrate whether the costs of release would be covered by the minimum financial resources required under the CER Act or *Pipeline Financial Resources Regulations*. The costs of a release should account for identification of different cost categories (e.g. clean up and remediation versus compensation) and location variables that would influence total costs.

For the additional information pertaining to risk assessment, refer to the Canadian Standards Association Standard Z662, *Oil and Gas Pipeline Systems*.

7.4.3.4. Toll details

Toll details will include:

- i. the tolls for the first five years of service;
- ii. where tolls are based on cost, the cost of the service and rate base by major component;
- iii. where tolls are not based on costs, the service delivery revenues and costs by primary component;
- iv. the method and rates of depreciation by facility account; and
- v. copies of all applicable tariffs, transportation contracts or operating agreements associated with the proposed facilities.

7.4.3.5. Information on funding for abandonment activities

The proponent will require approval of the estimated abandonment costs for the proposed facilities, and a process and mechanism for setting aside the required funds. If this approval is sought as part of the integrated review process, the proponent will be required to provide the information specified in the "Funding for Abandonment" section of the CER Filing Manual. In any event, abandonment funding information submitted as part of the integrated review process should include:

- i. The estimated abandonment costs proposed for the facilities, including a description of the methodology and assumptions used to estimate costs.
- ii. A description of how the proponent plans to set aside the funds (a trust, letter of credit or surety bond) and a draft copy of the proposed set-aside mechanism.
 - a. In the case of a trust,
 - a proposed trustee for the trust, and
 - a description of whether or not the trustee is governed by the *Trust and Loan Companies Act*, and
- iii. A description of how the funds will be collected.



7.5. Impacts of climate change commitments on economic and financial aspects

7.5.1. Goal

The Impact Statement includes information demonstrating that the need for and economic viability of the proposed facilities, and the economic information provided, considers climate change commitments and prescribed climate change laws, regulations and policies to meet Canada's commitments.

7.5.2. Filing requirements

Explain how the economic analysis for the project has incorporated: (i) current climate change legislation, regulations and policies, and (ii) financial risks or other uncertainties related to potential changes to climate change legislation, regulations and policies.

7.5.3. Guidance

Describe how existing climate change legislation, regulations and policies have been considered in the assessment of the utilization of the proposed facilities. Also, explain if and how economic feasibility can be influenced by financial risks and other uncertainties surrounding changes to climate change legislation, regulations and policies.

Include any laws, regulations and policies that have been drafted and tabled in the House at the provincial or federal level, but are not yet in force, can reasonably be expected to come into force and are not purely speculative. Explain the supply and market implications of these laws, regulations and policies in any scenario analysis or risk assessment related to these factors (e.g., the proponent may consider conducting a supply and market sensitivity analysis based on various levels of carbon pricing). Describe the extent to which climate change commitments have been considered.

The depth of analysis should be commensurate with the nature of the project and potential impacts.

7.6. Regulatory approvals outside the integrated review process

7.6.1. Goal

The Impact Statement must include information on regulatory approvals required for the project, other than those that are delivered at the outcome of the integrated review process.

7.6.2. Filing requirements

- i. Confirm that all regulatory approvals that are not part of the integrated review process, but that are required to allow the proponent to meet its construction schedule, planned in-service date and to allow the facilities to be used and useful, are or will be in place.
- ii. If any of these approvals may be delayed, describe the status of those approval(s) and provide an estimation of when the approval is anticipated.

7.6.3. Guidance

Information is required regarding the status of all required federal, provincial and municipal approvals or authorizations to be reasonably assured that there are no issues before other regulators that would prevent or delay either the construction or use of the project's facilities. Updates on status may also be provided after an Impact Statement has been submitted.

8. Lands information

8.1. Goal

The Impact Statement must include accurate documentation on land areas, land rights, the service of notice, the land acquisition process, and includes sample agreements and notices

8.2. Filing requirements – Land areas

Ensure the land documentation includes the following:

- i. the width of the right-of-way including the locations where the width varies;
- ii. the locations and dimensions of known temporary work spaces required for the project or, if locations are not known, a drawing showing the typical dimensions of the temporary work spaces required for road, watercourse and other crossings, storage areas and camps; and
- iii. the locations and dimensions of any new lands required for all associated facilities.

8.2.1. Guidance – Land areas

Provide a description of the requirements and rationale for both temporary and permanent lands to allow the CER to assess the appropriateness of the land areas. The description should include the dimensions of the:

- i. right-of-way;
- ii. temporary working space;
- iii. valve sites;

- iv. cathodic beds;
- v. pole lines;
- vi. access roads;
- vii. meter stations; and
- viii. facilities such as compressor stations.

Describe the location and distance of any changes to right-of-way width and the reasons for the change. Where new lands under any type of agreement are not required for the project, this should be clearly stated in the Impact Statement and no further land area information needs to be filed.

8.3. Filing requirements – Land rights

- i. Provide a description of the type of land rights to be acquired for the project and associated facilities.
- ii. Provide a description of the nature and relative proportions of land ownership along the proposed route (i.e., freehold, public or Crown lands).
- iii. Where no new land rights are required, provide a description of the existing land rights that allow the project to proceed.

8.3.1. Guidance – Land rights

The description of the type of land rights will allow landowners to know the different types of land required for the project (e.g., option, easement agreement, fee simple, compulsory right-of-way, temporary work space, licence or permit, etc.), and areas where existing land rights permit the project.

The description of the land ownership allows participants to know the land acquisition areas and the agreements necessary for carrying out the project.

8.3.2. Alternative dispute resolution

The CER encourages the parties affected by the projects it regulates to hold open and respectful exchanges to resolve issues that may arise throughout the project life cycle. The CER recognizes that there is a range of interest-based and responsive dispute resolution techniques that can be effective in addressing these issues and disagreements. Interest-based methods should be considered as an alternative or complement to regulatory or contested processes, such as the detailed route hearing, as soon as possible to achieve the best possible results.

The CER recommends that parties add alternative dispute resolution (ADR) to their project planning as soon as possible to resolve issues and manage conflicts. The CER's ADR experts are available to help stakeholders define and design the dispute resolution process that best suits their unique needs, regardless of the stage of the project.

8.4. Filing requirements – Land acquisition process

- i. Provide a description of the land acquisition process that will be required for the project.
- ii. Indicate the acquisition schedule and current status of the land acquisition process.
- iii. Indicate the status of notices served, pursuant to subsection 322(1) of the CER Act, to all owners of the lands to be acquired.

8.4.1. Guidance – Land acquisition process

Provide a description of the land acquisition process to be implemented to allow the assessment of the process and to be aware of the timing of acquisition.

The land acquisition information should describe the:

- i. numbers of landowners and tenants;
- ii. numbers of options or easement agreements signed;
- iii. numbers of notices served; and
- iv. timing of service of remaining notices.

This information may be provided in a table form.

8.5. Filing requirements – Land acquisition agreements

- i. Provide a sample copy of each form of land acquisition agreement proposed to be used (includes option and easement). The agreement shall be in the form required by subsection 321(2) of the CER Act;
- ii. Provide a sample copy of any proposed agreements for:
 - a. fee simple ownership;
 - b. temporary work space;
 - c. an access road; or
 - d. other agreements for the lands required for the project.

8.5.1. Guidance – Lands acquisition agreements

Provide a sample copy of the acquisition agreement(s) to enable the verification that the agreement complies with the requirements of the CER Act and that landowner's rights are protected.



Where lands will not be acquired pursuant to the above filing requirements, it is not necessary to file the respective sample copy of agreement.

8.6. Filing requirements – Notice

- i. Provide a sample copy of the notice proposed to be served on all owners of land pursuant to subsection 322(1) of the CER Act.
- ii. Confirm that all notices served or proposed to be served on owners of land pursuant to the requirements of subsection 322(1) of the CER Act include a copy of the CER publication titled: CER Landowner Guide.

8.6.1. Guidance – Notice

8.6.1.1. Notice

Provide a sample copy of the notice to assist the verification that the notice complies with the requirements of subsection 322(1) of the CER Act and that landowners and others persons are adequately notified.

8.6.1.2. Lands not acquired

In the event that a section 183 certificate is issued, the proponent would file the plans, profiles and books of reference (PPBoR) for the pipeline and serve notices pursuant to the requirements of subsection 201(1) of the CER Act on those landowners from which land rights have not been acquired. The construction of the project for those pipeline portions where the lands have been acquired may be allowed, with the exception of a buffer zone near the lands not yet acquired pending the proponent demonstrating that either the lands have been acquired, or the rights of the landowners have not been prejudiced.

8.6.1.3. Canada Energy Regulator – Landowners' Guide

The CER's publication CER Landowner Guide is available on the CER's website and copies are available from the CER Library.

9. Other potential information requirements

The following activities relate only to the CER Act and information is not required on these types of activities in the Impact Statement. If the proponent requires information with respect to the following, please refer to the CER Filing Manual.

- i. [Deviations](#)
- ii. [Change in Class Locations](#)
- iii. [Change of Service or Increase in Maximum Operating Pressure](#)

- iv. [Deactivation](#)
- v. [Reactivation](#)
- vi. [Processing Plant: Deactivation and Reactivation](#)
- vii. [Commodity Pipeline Systems](#)
- viii. [Tolls and Tariffs](#)
- ix. [Financial Surveillance Reports](#)
- x. [Import and Export Reporting Regulation Requirements](#)

10. Part 3 – Reference documents

Reference documents produced by the CER are available on its [website](#). These reference documents remain relevant to proponents with designated projects under the CER Act.

- [Canadian Energy Regulator Act](#)
- [Best Available Technologies in Federally Regulated Pipelines](#)
- [Canada Energy Regulator Filing Manual, 2020](#)
- [Canadian Energy Regulator Onshore Pipeline Regulations](#)
- [Canadian Energy Regulator Damage Prevention Regulations – Authorizations](#)
- [National Energy Board Cost Recovery Regulations](#)
- [National Energy Board Rules of Practice and Procedure, 1995](#)
- [Pipeline Financial Requirements Guidelines](#)
- Section 58 Streamlining Order XG/XO-100-2012, dated 1 August 2012 ([Filing A43203](#))
- Order MO-002-2017 – Compelling Publication of Emergency Management Program Information on Company Websites ([Filing A81701](#))
- Order MO-006-2016 – Compelling Publication of Emergency Procedures Manuals ([Filing A79720](#))
- Order MO-CO-3-96 – Exemption of Commodity Pipelines from the OPR
- [Revised Guidelines for Negotiated Settlements of Traffic, Tolls and Tariffs](#), dated 12 June 2002
- *Investigative Digs and Related Pipeline Repairs/Replacements*, dated 2 December 2002 ([Filing A04591](#))
- [Security and Emergency Preparedness and Response Programs](#), Appendix II to Guidance Notes for the National Energy Board Processing Plant Regulations, dated 24 April 2002
- [Information for Proposed Pipeline or Power Line Projects that Do Not Involve a Hearing](#)
- [Information for Proposed Pipeline or Power Line Projects that Involve a Hearing](#)
- [Landowner Guide](#) (previously Pipeline Regulations in Canada: A Guide for Landowners and the Public)
- [Pipeline Abandonment, A Discussion Paper on Technical and Environmental Issues](#), dated November 1996
- Canadian Standards Association Standard Z662, *Oil and Gas Pipeline Systems*