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October 28, 2005

Ms. Jennifer Scott  
Senior Legal Counsel  
Terasen Pipelines  
Suite 2700, 300 - 5th Avenue S.W.  
Calgary, Alberta  
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Dear Ms. Scott:

**Re: Terasen Pipelines Ltd, TMX Anchor Loop Project  
Project Scope and Terms of Reference**

I am writing with respect to the TMX Anchor Loop Project, being proposed by Terasen Pipelines Ltd. The project scope and terms of reference for the proposed Terasen TMX Anchor Loop Pipeline Project have now been formalized by the responsible authorities involved in the project's regulatory review. A copy of the terms of reference is attached.

At the stakeholder workshop held last week, distribution of the terms of reference to stakeholders was discussed. Terasen holds the most complete contact information regarding the members of their stakeholder and aboriginal consultation groups. Therefore, I would respectfully ask that Terasen distribute the scope/terms of reference to their contacts in the package containing the environmental assessment report. The scope/terms of reference will also be posted on the CEA registry.

If you have any questions, please contact me at (780) 422-7705 or by email at [tony.epp@ceaa-acee.gc.ca](mailto:tony.epp@ceaa-acee.gc.ca).

Sincerely,

Tony Epp, M.Sc., P.Geol.  
Senior Program Officer (Alberta Region)

cc: Howard Heffler

**Scope and Requirements of the Environmental Assessment for  
the Terasen Pipelines (Trans Mountain) Inc. TMX – Anchor Loop Project**

**27 October, 2005**

Compiled by:

Parks Canada Agency  
National Energy Board  
Fisheries and Oceans Canada  
Transport Canada  
Environment Canada  
Canadian Transportation Agency  
BC Ministry of Environment

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## Abbreviations

BC	British Columbia
CEA Act	<i>Canadian Environmental Assessment Act</i>
CN	Canadian National Railway
CNPA	<i>Canada National Parks Act</i>
CTA	Canadian Transportation Agency
DFO	Fisheries and Oceans Canada
GHG	greenhouse gas
km	kilometre
NEB	National Energy Board
NEB Act	<i>National Energy Board Act</i>
NWPA	<i>Navigable Waters Protection Act</i>
Parks Canada	Parks Canada Agency
Project	TMX – Anchor Loop Project
SCADA	Supervisory Control and Data Acquisition
Terasen Pipelines	Terasen Pipelines (Trans Mountain) Inc.
TC	Transport Canada
UNESCO	United Nations Educational, Scientific and Cultural Organization
VEC	Valued Ecosystem Component
Y2Y	Yellowstone to Yukon Conservation Initiative

## 1.0 INTRODUCTION

This document was compiled to set out the requirements as determined by federal and provincial authorities for the environmental assessment and other regulatory requirements of the Terasen Pipelines (Trans Mountain) Inc. (Terasen Pipelines) TMX - Anchor Loop Project (the Project).

Section 2.0 provides background information about the Project and the environmental assessment process. Section 3.0 describes the draft scope of the environmental assessment as determined by the Responsible Authorities pursuant to the *Canadian Environmental Assessment Act* (CEA Act). Section 4.0 provides additional requirements to be addressed in the environmental assessment, as stipulated by Parks Canada Agency (Parks Canada), Fisheries and Oceans Canada (DFO), Transport Canada (TC), Environment Canada, the Canadian Transportation Agency (CTA), and BC Ministry of Environment (formerly Ministry of Water, Land and Air Protection). Information on the filing requirements of the National Energy Board (NEB), including those related to environmental assessment, is provided separate from this document in the NEB's Filing Manual, released April 2004, and should be considered by Terasen Pipelines in the preparation of its environmental assessment for the Project.

Appendix I provides a partial list of assessment and regulatory decision making matters to be addressed by the proponent that are outside of the CEA Act environmental assessment process, as specified by Parks Canada, DFO, TC, Environment Canada, the CTA, and BC Ministry of Environment.

## **2.0 BACKGROUND**

### **2.1 Proposed Project**

The existing Terasen Pipelines Trans Mountain pipeline, which carries crude oil and refined petroleum products, was constructed in 1952-1953 between Edmonton, Alberta, and British Columbia's (BC) lower mainland, and is 1146 kilometres (km) long.

Terasen Pipelines proposes to increase the capacity of its existing Trans Mountain pipeline system through construction of a pipeline loop, or a segment of pipeline parallel to and interconnected with the existing pipeline system. The purpose of the pipeline loop is to increase capacity of the Trans Mountain pipeline system by alleviating hydraulic constraints.

The Project involves the construction of 158 km of 812 millimetre (mm) or 914 mm (32-inch or 36-inch) diameter pipe between a location west of Hinton, Alberta at kilometre post (KP) 310.1 and a location near Rearguard, BC (KP 468.0). The loop would pass through Jasper National Park of Canada in Alberta and Mount Robson Provincial Park in BC, as well as lands outside of these parks in both provinces. The Project also includes the installation of new pump stations at two locations elsewhere on the Trans Mountain pipeline: one in Alberta at Wolf (KP 188.0), and one in BC at Chappel (KP 555.5) (See Figure 1). Terasen Pipelines currently is in the design stage for the Project, and is conducting consultations.

The first 16 km of the Project would be located in Alberta east of Jasper National Park of Canada. 80 km of the Project are in Jasper National Park of Canada. A 1951 Government of Canada Order in Council authorized the original construction through Jasper National Park of Canada, and future consideration of looped pipelines as may be proposed. 60 km of the Project are in Mount Robson Provincial Park; a 1952 British Columbia Order in Council granted a right-of-way through the provincial park that authorizes one or more pipelines within the right-of-way. The final 2 km of the Project lie outside the western boundary of the provincial park.

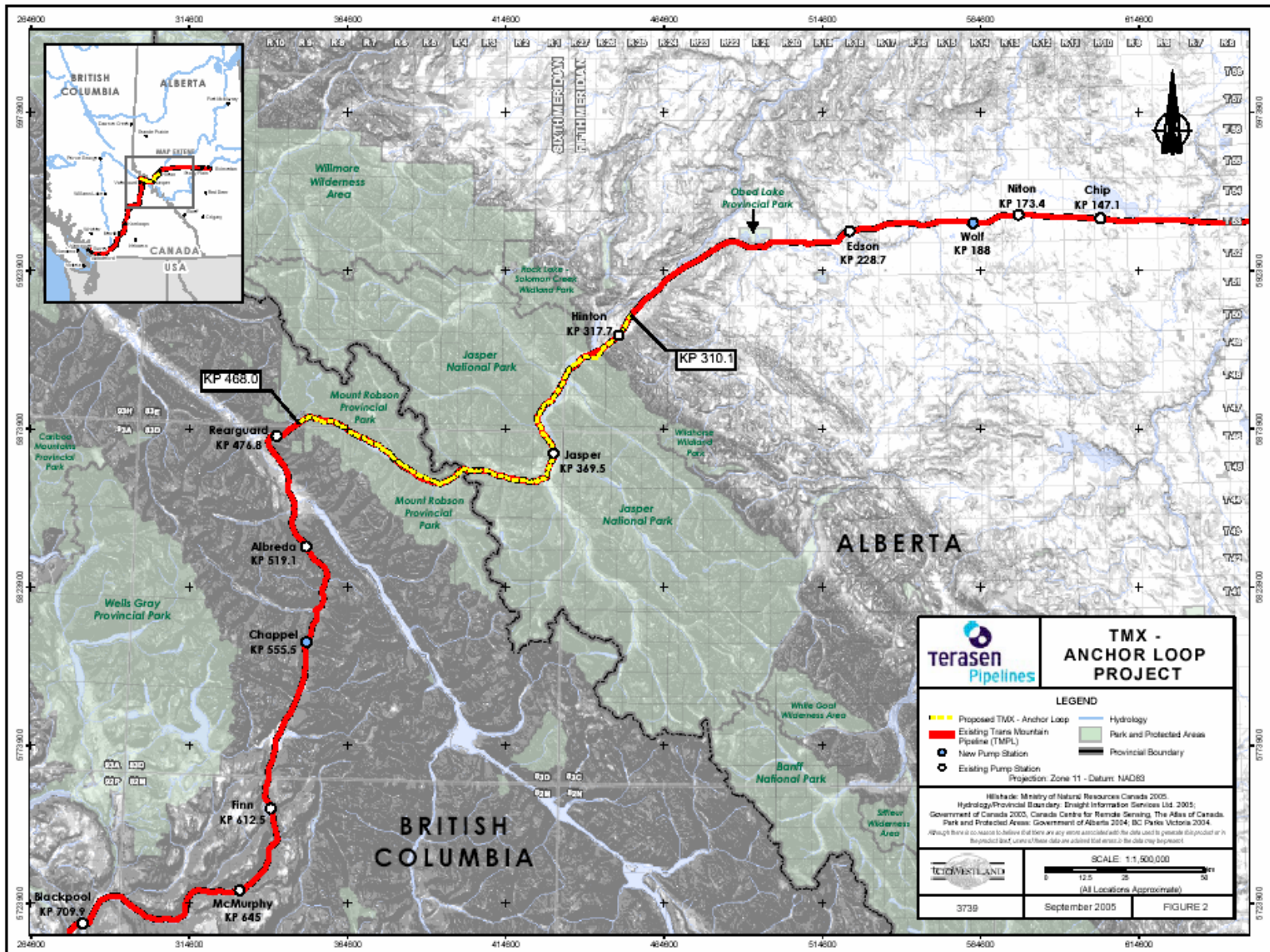


Figure 1: Proposed TMX – Anchor Loop Project (from Terasen Pipelines’ Project Description dated 27 September 2005)

## 2.2 Project Setting

Jasper National Park of Canada is a 10,878 km<sup>2</sup> protected wildland area located in Alberta's northern Canadian Rockies on the east side of the Great Divide. It is a cornerstone of a 20,000 km<sup>2</sup> UNESCO Canadian Rocky Mountains World Heritage Site, one of the world's largest blocks of protected areas. However, this largely wilderness park is transected by Highway # 16, the CN rail mainline and the TransMountain pipeline. All roughly parallel each other to traverse the park east to west by way of the Athabasca and Miette River Valleys. These utilities continue across BC's Mount Robson Provincial Park that adjoins Jasper National Park of Canada on the west side of the continental divide. Mount Robson Provincial Park also is a component of the Rocky Mountain Parks World Heritage Site that includes Banff, Yoho and Kootenay National Parks, and BC's Mount Assiniboine and Hamber Provincial Parks.

Mount Robson Provincial Park at 2249 km<sup>2</sup> is the second oldest provincial park in British Columbia. Mount Robson Provincial Park provides everything from developed, vehicle-accessible camping to remote wilderness valleys. Mount Robson Provincial Park also protects the headwaters of the Fraser River and Mount Robson, the highest peak in the Canadian Rockies.

## 2.3 Overview of the Environmental Assessment Review Process

The Project is subject to a screening level environmental assessment pursuant to the *Canadian Environmental Assessment Act (CEA Act)*

The NEB, Parks Canada, DFO, TC, and CTA are the Responsible Authorities and shall ensure that an environmental assessment of the Project is undertaken. If the Project were to receive regulatory approval, the Responsible Authorities would ensure that any mitigation measures taken into account in the environmental assessment were implemented.

The federal permits, authorizations, and actions which trigger the CEA Act and will be necessary for the Project are:

- a certificate of public convenience and necessity pursuant to section 52 of the *National Energy Board Act (NEB Act)*;
- permission pursuant to the *Canada National Parks Act* from Parks Canada for those parts of the Project within Jasper National Park of Canada;
- authorization by the Minister of Fisheries and Oceans pursuant to subsection 35(2) of the *Fisheries Act*;
- approval by the Minister of Transport pursuant to subsection 5(1) of the *Navigable Waters Protection Act* and subsection 108(2) of the NEB Act; and
- possible approval by the CTA pursuant to subsections 98(2) and 101(3) of the *Canada Transportation Act*.

To assist in the environmental assessment process, Environment Canada, Health Canada, and Indian and Northern Affairs Canada may provide expert advice in relation to the Project.



The British Columbia Ministry of Environment will be participating in the cooperative environmental assessment.

The Alberta regional office of the Canadian Environmental Assessment Agency is the Federal Environmental Assessment Coordinator for the Project. Its role is to coordinate the participation of federal authorities and provincial authorities in the environmental assessment process and to facilitate communication and cooperation among them and other participants.

The public will be offered opportunities to participate in the environmental assessment and offer their views. The public may consult the environmental assessment registry for the Project via the Canadian Environmental Assessment Registry, which is accessible at the Canadian Environmental Assessment Agency's website at [www.ceaa-acee.gc.ca](http://www.ceaa-acee.gc.ca). Project files will be maintained by the Responsible Authorities. Project files include all records produced, collected or submitted with respect to the environmental assessment of the Project. The NEB's project file for the Project is available on the NEB's web site at [www.neb-one.gc.ca](http://www.neb-one.gc.ca) under "Public Registries". Project files maintained by other Responsible Authorities are accessible through those other Responsible Authorities.

## **2.4 Background to this Document**

In preparation for the environmental assessment of this Project, Parks Canada, DFO, TC, CTA, Environment Canada and BC Ministry of Environment developed a draft Terms of Reference for the Project providing guidance on scope of the environmental assessment and the information expected to be included in the environmental assessment for the Project. The filing requirements of the NEB for an environmental assessment are already set out in the NEB's Filing Manual, released April 2004, so they were not reiterated in this document.

The draft Terms of Reference were distributed for public comment through Terasen Pipelines. Under cover letter dated 24 June 2005, Terasen Pipelines provided the draft document to groups who might have an interest in the Project, and requested that any comments be submitted to Terasen Pipelines or the Canadian Environmental Assessment Agency by 15 July 2005. When no comments were received by the deadline, the deadline for comments was extended to 25 July 2005. As of 21 October 2005, no comments have been received from the public on the draft document.

Much of this document is based on the draft Terms of Reference. The scope of the assessment in section 3.0 is based on guidance provided in the draft Terms of Reference and the NEB's Filing Manual, and on the requirements set out in the CEA Act. The additional requirements in section 4.0 are based on guidance provided in the draft Terms of Reference.

### 3.0 SCOPE OF THE ASSESSMENT

This section describes the scope of the federal environmental assessment for the Project as determined by the Responsible Authorities (NEB, Parks Canada, DFO, TC, and CTA) pursuant to the CEA Act. The term “scope of the environmental assessment” means the proposed scope of the Project for the purposes of the environmental assessment, the factors proposed to be considered in the environmental assessment, and the proposed scope of those factors.

The Responsible Authorities will ensure that an environmental assessment of the Project is conducted in accordance with the scope of the Project provided under subsection 3.1 below. The Responsible Authorities will include in their review consideration of the factors identified in subsection 3.2 and will consider the potential effects of the proposed Project within spatial and temporal boundaries described in subsection 3.3.

The scope of the assessment is based on the information about the Project provided to date by Terasen Pipelines. The scope of the assessment will be confirmed by the Responsible Authorities after Terasen Pipelines has submitted its application for the Project to the NEB. Interested parties will have the opportunity to participate in the NEB hearing process.

#### 3.1 Scope of the Project

The scope of the Project as determined for the purposes of the environmental assessment includes the various components of the Project as described by Terasen Pipelines in the September 2005 Project Description and as described in this document.

The scope of the Project includes construction, operation, maintenance and foreseeable changes, and where relevant, the abandonment, decommissioning and rehabilitation of sites relating to the pipeline loop and new pump stations, and specifically, the following physical works and activities:

- 158 km of 812 mm or 914 mm (32-inch or 36-inch) diameter pipe from just west of Hinton, Alberta (KP 310.1) to a location near Rearguard, BC (KP 468.0);
- new pump stations at Wolf (KP 188.0) in Alberta, and at Chappel (KP 555.5) in BC as follows:
  - located within a fenced area on approximately 1 hectare of land;
  - including pumps and motors housed in a building, an electrical control building, a storage building, and an electrical transformer;
- mothballing the existing Niton pump station (KP 173.4);
- new scraper trap on the existing right-of-way at Rearguard (KP 468.0);
- block valves and meter stations along the pipeline;
- Supervisory Control and Data Acquisition (SCADA) system linking the above facilities to control centres;
- communications system and power supply to service pump stations, meter stations, valve sites and other pipeline facilities; and
- various temporary construction workspace, access roads, work camps and equipment laydown areas.

The scope of the project also includes physical works or activities that are subsidiary to, ancillary to, or are inseparable from the Project.

It should be noted that any additional modifications or decommissioning/abandonment activities would be subject to future examination under the NEB Act and consequently under the CEA Act, as appropriate. Therefore, at this time, these activities will be examined in a broad context only.

### 3.2 Factors to be Considered

The environmental assessment will include a consideration of the following factors listed in paragraphs 16(1)(a) to (d) of the CEA Act:

1. The environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project and any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out;
2. The significance of the effects referred to in paragraph 1 (but see comments in Section 4.9 below);
3. Comments from the public that are received during the public review; and
4. Measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project.

For further clarity, subsection 2(1) of the CEA Act defines ‘environmental effect’ as:

- a) any change that the project may cause in the environment, including any change that the project may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species as defined in the *Species at Risk Act*;
- b) any effect of any change referred to in paragraph (a) on
  - i. health and socio-economic conditions,
  - ii. physical and cultural heritage,
  - iii. the current use of lands and resources for traditional purposes by aboriginal persons,
  - iv. any structure, site or thing that is of historical, paleontological, or architectural significance; or
- c) any change to the project that may be caused by the environment, whether any such change or effect occurs within or outside Canada.

In accordance with paragraph 16(1)(e) of the CEA Act, the assessment by the Responsible Authorities will also include a consideration of the additional following matters that are deemed to be relevant:

5. The purpose of the project;<sup>1</sup>
6. Need for the project;

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<sup>1</sup> The Canadian Environmental Assessment Agency’s October 1998 Operational Policy Statement addressing the “need for” the project, the “purpose of” the project, the “alternatives to” the project and “alternative means” of carrying out the project, provides definitions and general guidance on when and how these factors should be considered.

7. Alternative means of carrying out the project that are technically and economically feasible and the environmental effects of any such alternative means;
8. The need for, and the requirements of, any follow-up program in respect of the project; and
9. The capacity of renewable resources that is likely to be significantly affected by the Project to meet the needs of the present and those of the future.

### **3.3 Scope of Factors to be Considered**

The environmental assessment will consider the potential effects of the proposed Project within those periods and areas during and within which the Project may potentially interact with, and have an effect on components of the environment. These spatial and temporal boundaries will vary with the issues and factors considered, and will include;

- construction, operation, decommissioning, site rehabilitation and abandonment or other undertakings that are proposed by Terasen Pipelines or that are likely to be carried out in relation to the physical works proposed by Terasen Pipelines, including mitigation and habitat replacement measures;
- the natural variation of a population or ecological component;
- the timing of sensitive life cycle phases of wildlife species in relation to the scheduling of the Project;
- the time required for an effect to become evident;
- the time required for a population or ecological component to recover from an effect and return to a pre-effect condition, including the estimated degree of recovery;
- the area affected by the Project; and
- the area within which a population or ecological component functions and within which a Project effect may be felt.

For the purpose of the assessment of the cumulative environmental effects, the consideration of other projects or activities that have been or will be carried out will include those for which formal plans or applications have been made.

## 4.0 ADDITIONAL ASSESSMENT REQUIREMENTS

This section provides additional assessment requirements for an environmental assessment of the Project, as specified by Parks Canada, DFO, TC, Environment Canada, CTA, and BC Ministry of Environment.

In Jasper National Park of Canada, the *Canada National Parks Act* (CNPA) and its Regulations, and the *Canadian Environmental Assessment Act* (2003) apply to the Project. For Parks Canada, the Project triggers the CEA Act with Parks Canada as a Responsible Authority pursuant to Sec 5(1)(c), Sec 5(1)(d) and Sec 11(1) of the CEA Act. The CNPA mandates Parks Canada to consider the ecological integrity of Jasper National Park of Canada as the first priority when making decisions about management of parks.

In Mount Robson Provincial Park, the BC *Park Act* and its regulations and processes apply to the Project. BC's *Environmental Assessment Act* does not apply to the Project.

Alberta's Environmental Protection and Enhancement Act does not apply to the Project.

Terasen Pipelines is alerted that Parks Canada will take close guidance from two reference sources in determining the adequacy of the environmental assessment. "The Responsible Authority's Guide to the *Canadian Environmental Assessment Act*", published by the Canadian Environmental Assessment Agency, provides explanation of the intent of the elements of the CEA Act. The NEB "Filing Manual" provides guidance regarding the content and topics to be addressed in an environmental assessment. In addition to the following stipulated environmental assessment requirements, Parks Canada will consult both of these documents to guide the review process.

### 4.1 Description of the Project

In the environmental assessment report Terasen Pipelines will provide a description of the Project, including those components mentioned in Section 3.1 as well as the following:

- existing infrastructure and operation, including access points;
- planning and studies;
- elements of the proposed looping ;
- related projects – including abandonment of existing infrastructure;
- preferred route and alignment alternatives;
- governance and management arrangement to deliver the Project;
- construction;
- testing and start-up;
- reclamation and restoration;
- operation and ongoing maintenance of the new pipeline and station sites; and
- removal and reclamation of abandoned components of existing pipeline.

## 4.2 Acts, Plans, Policies, and Strategies Considerations

### 4.2.1 Species at Risk Act

The *Species At Risk Act* obligates a project proponent to investigate and report on the presence and implications of the Project on flora and fauna defined as “at risk”. Terasen Pipelines is expected to discuss the potential impacts of the Project on species at risk in relation to applicable legislation, policy, management plans, mitigation measures, recovery plans or land use planning initiatives. The assessment should discuss effects the Project may have on:

- listed wildlife and plant species (the proponent is advised to consult with the latest lists);
- critical habitat or the residences of individuals of that species;
- mitigation measures to avoid or lessen those effects;
- monitoring programs to assess the impacts from the Project and the effectiveness of mitigation measures; and
- discuss how the mitigation measures applied are consistent with any applicable recovery strategy and action plans.

Additionally, the assessment must provide the information necessary to evaluate the potential impacts of the Project on species of concern listed by the Province of BC and the Province of Alberta.

### 4.2.2 Parks Canada Agency Acts, Plans and Policies

The *Canada National Parks Act* (CNPA) and Parks Canada’s *Guiding Principles and Operational Policies* both provide corporate mandate level guidance for considering the propriety and effect of the proposed Project. The recently revised CNPA provides direction for decision-making regarding projects that could affect the natural environment, to wit:

CNPA subsection 8(2): “The maintenance or restoration of ecological integrity, through the protection of natural resources and natural processes, shall be the first priority of the Minister when considering all aspects of the management of the parks”.

Ecological integrity means “with respect to a park, a condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes”.

From *Parks Canada Guiding Principles and Operational Policies*:

Subsection 3.1.1 “National Park ecosystems will be given the highest degree of protection to ensure the perpetuation of natural environments essentially unaltered by human activity”.

The *Jasper National Park of Canada Management Plan* sets forth policies and land-use direction for the management of the park. The park plan makes special note of concern about linear infrastructure already in the park – e.g., “The Yellowhead Trans-Canada Highway (16), park

roads, a pipe line and the rail line fragment the landscape and, in some cases, block the movement of wildlife”. All proposed projects and activities must be demonstrated to be consistent with the provisions of the approved park management plan.

Parks Canada will be attentive to direction arising from the forgoing corporate documents that guide Parks Canada in decision making about management of Jasper National Park of Canada. Terasen Pipelines is advised to review and carefully consider these and other Parks Canada acts, plans and policies in preparing and assessing their Project proposal.

#### 4.2.3 Parks Canada’s Sustainable Development Strategy

The Parks Canada *Sustainable Development Strategy* will apply to the Project. The global definition of “sustainable development” is:

*“development that meets the need of the present without compromising the ability of future generations to meet their own needs”.*

Parks Canada’s mandate fits well into that expectation;

*“To protect and present nationally significant examples of Canada’s natural and cultural heritage, and to foster public understanding, appreciation and enjoyment in ways that ensure the ecological and commemorative integrity of these places for present and future generations”.*

Terasen Pipelines will explain the sustainable development implications of the Project in the context of the goals and purposes of Jasper National Park of Canada. Parks Canada will employ contemporary expectations of sustainable development in examining the Project proposal. All traditional aspects of assessing large, linear project planning will be pursued, including but not limited to – wildlife, vegetation, hydrology and watershed, archaeological and cultural values, aboriginal interests, etc. Also, new concepts of continental wildlife habitat connectivity – Yellowstone to Yukon Conservation Initiative (Y2Y), landscape continuity for biological integrity and genetic diversity, critical mass population topics, etc. will be considered.

### 4.3 Valued Ecosystem Components

Valued ecosystem components (VECs) are components of the natural and human world that are considered valuable by participants in a review process. Ideally, these components would be specific and measurable. In a national park setting this is straightforward when dealing with tangible topics – such as hectares of Montane meadowland or lodgepole pine forest. However, this intellection is challenging when confronting concepts such as integrity of wilderness, or scientific theories such as genetic connectivity. The purpose of identifying VECs in Jasper National Park of Canada and Mount Robson Provincial Park for the Project is to focus the environmental planning and impact assessment on the most important and known sensitive resources that might be affected by the Project.

For the purpose of making an environmental determination about the Project, the environmental assessment will focus on (emphasize) the following environmental issues:

- terrestrial wildlife habits and habitats, including connectivity and wildlife response to construction and post construction conditions. Here, a distinction is to be made between those species that adapt more readily to human activities (such as deer and elk) and other species that are less resilient and at greater risk to man-caused mortality when displacement, habituation, or habitat loss occurs e.g., grizzly bears, wolves, wolverines and cougars;
- species at risk or of special concern – Haller’s apple moss, western toad, bull trout, (BC blue-listed species), boreal moonwort (*Botrychium boreale*, BC Red-listed species), Canada anemone (*Anemone Canadensis*, BC blue-listed species), purple-leaved willow herb (*Epilobium ciliatum* ssp. *watsonii*, BC blue-listed species), meadow willow (*Salix petiolaris*, BC blue-listed species), grizzly bear, mountain caribou and wolverine. The proponent is advised to consult with the latest lists;
- protection and restoration of aquatic habitats and species – particularly special and indicator species such as northern pike, bull trout, lake whitefish and harlequin duck habits and habitats. Spawning habitat and aquatic connectivity are important considerations. Associated ponds and wetlands are integral components of the aquatic environment of the Fraser, Miette and Athabasca Rivers. The Pocahontas Ponds, the confluence with the Snaring River, Moose Marsh and Yellowhead wetlands are particularly sensitive locations;
- migratory birds;
- protection of the Fraser, Athabasca and Miette Rivers, their tributaries and associated riparian ecosystems in the vicinity of the Project will be important. There are 52 locations of linear infrastructure interference with the natural flow of water between the town of Jasper and the east gate. Protection and restoration of the fluvial land forming processes of both the Athabasca and Miette Rivers and their tributary watersheds is a goal of the Jasper National Park of Canada Management Plan. The sand dunes are a noteworthy example of unique landforms resulting, in part, from natural fluvial processes in the Athabasca valley. Equivalent protection of water resources and fluvial processes is necessary in the Fraser River watershed in Mount Robson Provincial Park. Similar consideration exists outside of the Federal and Provincial parks;
- protection of the scarce Montane habitat of the Athabasca River valley, including its evolutionary processes, such as fire. The Douglas fir savannah is a noteworthy example of a unique component of the Athabasca valley Montane. The Montane can be adversely impacted by both direct and indirect stresses, as evidenced in the Three Valley Confluence area (see Cumulative Effects below);
- in Mount Robson Provincial Park, old growth stands of western red cedar/western hemlock and Douglas fir are significant;
- avoidance and protection of the special cultural and archaeological resources of the Athabasca Valley. The historic context of the Athabasca and Miette River Valley, and extending on through the Yellowhead Pass to Moose River is noteworthy. This route was an



important pre Euro-Canadian contact route for aboriginal travellers. Uncharted pre-contact burial sites can be anticipated, particularly in the Miette River valley. After David Thompson's explorations the route became increasingly important as a travel and trade passage through the Northern Rockies, into the headwaters of the Fraser River, leading on to the Pacific Ocean. Many artefacts have been discovered; likely others remain to be found. Significant historical railway and Japanese internment sites also exist in the Yellowhead Pass – Moose River corridor. Pipeline projects must be carefully researched and undertaken not to inadvertently destroy our historical heritage. It is important to appreciate that once damaged or destroyed, valuable archaeological or cultural sites are lost forever, they cannot be restored;

- maintenance of existing ecosystems and restoration of aquatic and terrestrial landscapes previously disturbed, for example - wetlands (e.g., Pocahontas ponds), rock cuts (e.g., Windy Point) and sensitive locales (e.g., Snaring River complex) along the original 1952 pipeline alignment;
- capacity of the natural resources of Jasper National Park of Canada and Mount Robson Provincial Park to fulfill the expectation of maintaining the park unimpaired for future generations of park visitors; and
- continued safe navigable waterways that allow for uses including recreation and traditional purposes.

Note that VECs need not be only environmental in nature; they can be attributed to economic, social, aesthetic or ethical reasons as well. In the case of this Project, public safety and perception of the integrity of the wildlands of Jasper National Park of Canada and Mount Robson Provincial Park are equally as important as are the protected area natural resource considerations. Some of these VECs are directly under the purview of a CEA Act environmental assessment, if they arise from a change in the environment; such a situation may occur for:

- visual (aesthetics) and auditory appreciation and recreational enjoyment of Jasper National Park of Canada and Mount Robson Provincial Park, during both the construction and operation phases of the Project;
- sense of undisturbed wildlands of Jasper National Park of Canada and Mount Robson Provincial Park and the integrity of the World Heritage Site status; and

Other effects on these VECs that arise as a result not of a change in the environment (for example, they arise from the Project directly) are important for decision-making, but strictly speaking are outside of the CEA Act environmental assessment; see Appendix I for more information on some such regulatory decision-making matters which Terasen will have to address.

#### **4.4 Spatial and Temporal Boundaries**

The assessment will need to address a variety of different time and space variables depending on the topic being investigated and reported – social, environmental and economic. Time and space

considerations will vary for the natural environment component of the assessment. The existing built structures have functioned for 53 years, with many years of functional future expected. It can be anticipated the longevity of the new pipeline will be similar. Perhaps the functional time line for the Project is one hundred years. The functional period for the replacement of mature lodgepole pine forests that will be disturbed by the Project is about 80 years. Parks Canada uses a rule of thumb of ten years to restore ground and shrub cover and to see the early seral stages of forest recovery. The assessment recognizes that some historically forested lands will be permanently converted to grass and shrub seral stages.

In general the spatial considerations for natural features may include:

- site specific – e.g. a stream crossing, den site, highly visible location, etc;
- local – in the Fraser, Athabasca and Miette River Valleys;
- regional – in Jasper National Park of Canada and Mount Robson Provincial Park;
- supra-regional – in Alberta and British Columbia; and
- continental – Y2Y.

For vegetation, soils and geology, aquatic environments and other site-specific resources, the space will be the Fraser, Athabasca and Miette River Valleys or the sites of potential direct impact.

Wide ranging species – such as grizzlies, wolverine, caribou and lynx - require a wider spatial consideration well outside the Fraser, Athabasca and Miette River watersheds in some instances. Wolves originating in the national parks have been recorded to travel hundreds of kilometres before returning to their home territory, including regularly into Mount Robson Provincial Park. In cases such as these the effect of the Project is a very large setting – Yellowstone to Yukon probably is reasonable. Valued Ecosystem Components (VECs) and spatial boundaries will be further defined through consultation with the public, key stakeholders and expert government departments.

#### **4.5 Cumulative Effects Considerations**

Cumulative effects consideration refers to the concern that the effects of multiple, independent projects may be additive when they occur in the same time and/or same space. Although a social or natural environment may be able to withstand the effects of a single project, it could be overwhelmed, damaged and permanently impaired by stresses arising from adverse effects of several coinciding activities or projects. Consequently it is important to consider past and enduring impairments arising from the original Trans Mountain pipeline facility and operation, and their possible restoration to avoid cumulative impacts. Similarly, it is important also to become informed about other projects, past, present or reasonably foreseeable that might combine with the effects of the Project to create cumulative adverse impacts.

A highway, a rail line, the Trans Mountain pipeline, a fibre optic cable and a natural gas pipeline already transect the Fraser, Athabasca and Miette River valleys. Additionally, commercial services, tourist accommodations, a golf course, the Jasper townsite, trails and campgrounds and Parks Canada's infrastructure all combine to affect the natural environment of the area. The

Three Valley Confluence of the Athabasca, Miette and Maligne Rivers near the town of Jasper is known to be a wildlife crossroads of Jasper National Park of Canada. This area in particular is one of the Montane locations under exceptional stress, and now is subject to a recovery and restoration plan led by Parks Canada, and supported by a host of stakeholders.

Effects of pressures well outside Jasper National Park and Mount Robson Provincial Park must be considered in the case of wide ranging animals – e.g., grizzly bears and wolves. The Foothills Model Forest project addresses these kinds of concerns. This topic is further explored in the section on Time and Space Boundaries.

Forests in both Jasper National Park of Canada and Mount Robson Provincial Park are host to pine beetle infestation. The Terasen Pipelines environmental assessment is to consider this situation and discuss any issues, mitigations or best management practices that arise from the projects' influence on the forest health situation. Similarly, parks' use and intentions for forest fire management are to be considered in the placement, construction and operation of the Project.

Cumulative effects will be an important consideration in the examination of the Project – this must be addressed thoroughly in the environmental assessment document.

## **4.6 Intent and Content of the Environmental Assessment**

### **4.6.1 Intent of the Environmental Assessment**

The Environmental Assessment Report must identify potential adverse environmental impacts of the Project, propose measures to avoid and mitigate these effects, and provide information necessary to allow each Responsible Authority to determine the likelihood of the Project to cause significant adverse environmental effects.

In general, the environmental assessment is intended to present:

- an intent of the environmental assessment process is to promote sustainability. The proponent shall identify any sustainable practices that will be employed as a part of project activities;
- an explanation of the need for the Project, with a review of alternatives to the Project, and a description of alternative ways and means to carry out the proposal, and where applicable indicate their potential environmental effects and impacts. Compare identified alternatives and the anticipated environmental effects and impacts of the alternatives. Discuss reasons for not selecting any identified alternatives;
- an analysis of each alternative's capacity to meet the goals of problem resolution, both for Terasen Pipelines' and Parks Canada's objectives;
- a description of the principal project being proposed, and any accessory projects;
- an analysis of Acts, policies, regulations, and approved plans applicable to the Project. To maintain or restore natural and cultural values for future generations is a primary goal for BC Parks. Maintenance or restoration of ecological integrity is the first priority when considering all aspects of the management of national parks. For Parks Canada and BC Park's these considerations will be imperative in evaluating all elements of the

Terasen Pipelines' environmental assessment for Jasper National Park of Canada and Mount Robson Provincial Park;

- a description of the environment that will be affected by the Project, including biological and relevant socio-economic conditions;
- an analysis of the interaction of the Project with the environment with emphasis to identify instances where adverse environmental effects might arise;
- an identification and assessment of mitigation measures, including new techniques to consider to avoid adverse effect;
- a report and analysis of concerns expressed by the public and persons with particular stakeholder interest, and Terasen Pipelines' response;
- an identification of residual adverse environmental effects; and
- a description of how the principles of pollution prevention, waste minimization and recycling have been incorporated into the Project design including methods and technologies to reduce waste quantities to the lowest practical levels.

#### 4.6.2 Content of the Environmental Assessment

The Terasen Pipelines' environmental assessment is to include a thorough examination of the potential effect of the Project on valued ecosystem components (VECs) in particular. These include bull trout and their habitat, migratory birds, harlequin ducks and their habitat, and sensitive wildlife that are highly valued components of the national park ecosystem - grizzly and black bears, moose, elk, deer, bighorn sheep, Rocky Mountain goats, wolverines, cougars, lynx, wolves, northern pike and lake whitefish are notable species in this area. Haller's apple moss and western toad, and grizzly bear, wolverine and mountain caribou are species respectively at risk, or of special concern in Jasper National Park of Canada. Other species of wildlife are present and are to be considered for potential effect by the proposed works. Wetland habitats are of particular value and at some risk from the Project. Minimizing the construction and operational impacts on terrain and aquatic/riparian environments will be an important issue. The assessment is to examine the proposed mitigation measures and suggest additional or alternative practical methods where adverse effects can be avoided or reduced. The spatial context of the assessment will be variable ranging from a specific site of sensitivity to a much wider regional scale for wide ranging species potentially affected by the Project. The temporal scale will require short and long term considerations for different ecosystem components and construction and operational impacts.

The assessment is to explain and justify the methods used to predict potential impacts of the Project on the VECs, on interactions among these components and on any broader relationships with the physical, biological and human environments. In describing methodology:

- explain how scientific, engineering, traditional, and other knowledge was used to reach conclusions;
- identify and justify any assumptions made;
- specify data collection methods and report the confidence, reliability and sensitivity of any models used to reach conclusions; and
- specify and reference sources for any contributions based on traditional knowledge

Although the assessment is to focus on specific VECs that are to receive special attention, the environmental impact analysis is to consider and report on the effect of the Project on other elements of Jasper National Park of Canada's and Mount Robson Provincial Park's environment as well. The degree to which each of the topics is researched and discussed is dependent on the extent of interaction of the Project and the resource being examined. For example there may be little to report about effects on geologic resources. Substantially more discussion will be expected about the interaction of the Project with fish, fish habitat, and aquatic resources. Also, the effect of the environment on the Project is to be addressed - e.g. seasonal limitations on construction, sensitive times for sensitive species. In addition to the VECs, the effects of the Project on the following environmental factors will be investigated and reported:

**General –**

- hydrologic and watershed resources, both surficial and groundwater;
- terrain and geomorphology;
- soils and geology;
- vegetation, particularly Montane and riparian ecosystems;
- prevention and control of non-native invasive plant species;
- fish and wildlife and their habitat, in addition to the VECs mentioned above;
- air quality and climate;
- noise, visibility and aesthetic considerations;
- aboriginal persons interests;
- archaeological and historic resources; and
- toxic and hazardous products or circumstances.

**Wetlands** - require several points of attention different than aquatic communities

- include a description of any monitoring program, including both compensation monitoring and construction monitoring, developed to evaluate the effectiveness of mitigation measures for maintaining habitat quality and of the compensation structures for use by the fish community;
- describe the location, size of wetlands, wetland type, condition, flora and fauna;
- describe wetland function and ecosystem components that contribute to the integrity of the wetland. Discuss how wetland function and ecosystem components that contribute to the integrity of the wetland will be affected by the Project;
- describe the ecological function the wetland is contributing, including but not necessarily limited to; quantity of surface water and groundwater, quality of surface water and groundwater, terrestrial and aquatic habitat. Describe how the ecological function the wetland is contributing may be affected by the Project; and
- discuss mitigation measures to address the no net loss of wetland function.

Crossing watercourses and wetlands requires special care to avoid damage of these sensitive environments. Describe and evaluate the potential impacts of the Project watercourse and wetland crossings including a consideration of:

- the proposed watercourse crossing and temporary vehicle crossing methods;
- for each proposed method, describe timing and duration, the anticipated extent of physical disturbance, blockages or changes to flow patterns, need for blasting and the factors that would influence these issues;
- for each method, describe how habitat could be altered (in stream, riparian and water quality);
- identify any criteria that would be used to select the methods to be used for each watercourse crossing; and
- standards or guidelines related to watercourse crossings that would be applied.

**Navigable waters** - the proponent is to fully describe any project activities or works on, in, near, or over a watercourse, identify any potential navigational impacts or impediments and how these impacts will be mitigated. Any compensation that will be employed for watercourse crossings as part of project works shall be discussed.

**Migratory Birds** - describe and evaluate the potential impacts of the Project on migratory birds including a consideration of:

- disruption of sensitive life stages or habitat (e.g. nesting, rearing, staging, moulting, migrating);
- fragmentation or alteration of habitat (e.g. siting of Project facilities, watercourse crossings, habitat quality);
- visual or auditory disturbance, including habitat avoidance in relation to Project facilities or activities; and
- mitigation measures and strategies to minimize the impact impacts on migratory birds.

**Air Quality** - describe and evaluate the potential impacts of the Project on air quality, including a consideration of:

- the Project activities and components which would be sources of air emissions;
- emissions of concern by source for each Project phase, including quantity, timing and duration, normal operation conditions and upsets;
- the air quality parameters that would be affected by these emissions (e.g. dust, particulates (PM10 and PM2.5), sulphur dioxide (SO2), nitrogen dioxide (NO2), carbon monoxide, volatile organic compounds, ground level ozone (O3), odour); and
- relevant territorial and federal air quality standards or guidelines should be discussed, as appropriate, including their purpose and use in relation to the Project phases.

**Greenhouse Gases and Climate Change** - identify the sources of and total greenhouse gas (GHG) emissions of the Project. Discuss the Project's incremental contribution to total provincial and national GHG emissions on an annual basis. Identify any stages or elements of the Project that are sensitive to changes or variability in climate parameters. Discuss what impacts the changes to climate parameters may have on the on Project.

**Accidents and Malfunctions** -describe and evaluate the potential impacts of Project-related accidents and malfunctions on the environment. Identify and discuss, for each Project phase,

the potential accidents or malfunctions that occur as a result of the Project, including a consideration of:

- spills of a hazardous material (on land, ice and in water);
- fire;
- use of explosives;
- transportation accidents (air, land, water);
- rupture or failure of a pipeline (on land, beneath a watercourse); and
- failure of components at a compression or processing facility.

Particular attention should be focused on sensitive components of the environment that could be affected in the event of an accident or malfunction.

**Emergency Response and Environmental Management** - describe company programs regarding facility monitoring, emergency preparedness and environmental management. The descriptions should be in sufficient detail in order to understand the scope of the programs, how they work, how they are developed, the link to any regulatory requirements and the expected components of these programs.

**Facility Monitoring** - the programs to monitor the physical condition of Project facilities and their operation are relevant to understanding how Terasen Pipelines' design and management reduces the risk of an accident or malfunction occurring and is able to detect one, if it occurs. Describe the safety and detection measures that would be incorporated at Project facilities, including such things as: access restrictions, monitoring and surveillance systems, pipeline integrity programs, malfunction detection devices, emergency shutdown systems, fire fighting systems, emergency power units and communications systems.

**Emergency Preparedness** - provide a general description of the Terasen Pipelines' Emergency Response Procedures, including the company level of preparedness, safety, response capability and procedures in the case of an emergency. Include the types of Emergency Response Procedures that would be developed, the purpose of the programs and what the programs are intended to achieve. Identify the facilities and activities for which procedures would be developed.

**Mitigation Measures and Residual Effects** - The general approach is to first identify and describe the baseline conditions that could be affected by construction or operation of the Project. The anticipated adverse impacts are then to be identified, with a prediction of the extent to which negative effects can be avoided or mitigated by planning, Project design, mitigation measures and operational practices. It is important to appreciate the Project planning and environmental assessment will be undertaken with strict guidance for the requirements arising from the CNPA intent for ecological integrity. Taking into consideration mitigation measures and best management practices, the nature of adverse, residual effects will be discussed. Subsequently, Parks Canada will use factors of magnitude, geographic extent, duration, frequency, reversibility and potential cumulative effects to determine impact significance. A knowledge gap analysis is to be performed and a correcting course of action proposed to address deficiencies pertinent to making sound conclusions.

#### **4.7 Public Participation and Proponent Response**

The Project has been registered in the Canadian Environmental Assessment Registry (CEAR), and will be subject to public consultation and input. It is expected that the NEB will convene a public hearing as part of its process for evaluating the Terasen Pipelines proposal. Other federal government departments and interested stakeholders may be involved.

During preparation of the Project's planning and environmental assessment it is expected Terasen Pipelines would undertake a public information and consultation program. A range of program activities will be used to ensure stakeholders receive: early and consistent public notification, access to information, and the opportunity to evaluate and respond to key Project information in advance of key decisions and milestones. The final scope and design of the public involvement program should be responsive to input from interested stakeholders.

In addition to establishing and maintaining a Project registry and stakeholder database, public access to information for recent large projects in national parks have been successfully facilitated through: regular public newsletters, portable displays, a Project website, and written material available at select Parks Canada offices and public libraries. Media communiqués and announcements may be issued if appropriate. Draft and final environmental assessment documents could be presented in written and electronic format. Public input should be encouraged through on-going stakeholder meetings and open houses as deemed appropriate.

Public comments could be received in writing, orally and electronically throughout the consultation program. Typically Terasen Pipelines would engage a third party consultant to ensure independent, objective review of the information. The analysis will summarize public views and concerns on the Project, and be incorporated in Terasen Pipelines' final environmental assessment document.

The final environmental assessment document will describe the total public consultation activities that have taken place during the study. This section will outline how the public and regulatory authorities were consulted, who was consulted, issues and concerns that were raised and how they were addressed in the Project plan. Any changes to the Project that arise from these consultations will be described in an amended final environmental assessment document.

Aboriginal interests have been identified for areas outside Jasper National Park of Canada, and may exist inside the park as well. There are known and documented First Nation interests in Mount Robson Provincial Park. The Government of Canada and the Province of British Columbia have a duty to consider aboriginal interests in project undertakings and environmental assessments.

#### **4.8 The Need and Role for Monitoring and Follow-up**

The environmental assessment is to present a comprehensive plan for monitoring the installation and operation of the proposed works. Also, a governance and competency plan detailing Terasen Pipelines' capability, readiness and commitment to carry-through with remedial action wherever



and whenever a situation related to the Project and its operation requires intervention to deal with unanticipated events, malfunctions, and accidents.

Monitoring occurs before, during and after the Project. Pre-construction monitoring attends to extant circumstances that may require specific short-term responses – e.g., staying away from an active den site during the occupation period. Monitoring during construction ensures application of agreed procedures and mitigations, and responds to unexpected and surprise situations. Post Project monitoring addresses progress of reclamation and adaptive management interventions where restoration is not proceeding satisfactorily. An important part of all stages, but particularly post-Project, is to improve knowledge about environmental protection science and methods, and to be able to demonstrate that ecological integrity has been maintained or restored. Monitoring is an integral element of the “follow-up” program.

The CEA Act defines a “follow-up program” to mean a program for

- a) verifying the accuracy of the environmental assessment of a project, and
- b) determining the effectiveness of any measures taken to mitigate the adverse environmental effects of the project.

A follow-up program is an essential element of undertaking such a major project in Jasper National Park of Canada and Mount Robson Provincial Park and areas outside the parks. The TransMountain pipeline has been in operation in Jasper National Park of Canada and Mount Robson Provincial Park for 52 years. Substantial knowledge about its environmental and social effects is known. Also, the knowledge about the impact of building and operating petroleum pipelines elsewhere is extensive. Knowledge gained in these circumstances has allowed for new design and installation techniques, new materials, remedial intervention to change Project components that were not performing as expected, and to respond to unanticipated situations. Consequently, the pipeline industry has learned a great deal about building and managing high capacity petroleum pipelines. A follow-up program is an important part of an adaptive management strategy for dealing with Project elements that are capricious in nature – e.g., invasion by non-native plant species.

The follow-up program should be specific in terms of methods used, protocols, frequency of monitoring, and duration of the follow-up program. Analysis and reporting of the results of the follow-up program should include: 1) whether any remedial actions were necessary; 2) whether the results of the follow-up program were in accordance with the predicted effects; and 3) whether any lessons were learned. By using such programs and strategies, Parks Canada can continue to be unsurpassed in managing wildland resources.

#### **4.9 Findings and Conclusion**

The findings of the interaction of the Project with the environment – biotic, abiotic, social, cultural and economic – of Jasper National Park of Canada and Mount Robson Provincial Park will be summarized. The document will describe designs, methods and measures proposed to avoid and minimize adverse effects. Cumulative residual effects will be described. Monitoring and follow-up commitments will be detailed.

Each Responsible Authority will make a determination pursuant to subsection 20(1) of the CEA Act whether, taking into account the implementation of any mitigation measures that the Responsible Authority considers appropriate, the Project is likely to cause significant adverse environmental effects.

## Appendix 1 – Matters Outside of the CEA Act Environmental Assessment Process

This Appendix section provides a partial list of assessment and regulatory decision-making matters that will have to be addressed by the proponent, as specified by Parks Canada, DFO, TC, Environment Canada, CTA and BC Ministry of Environment, but which strictly speaking are outside of the CEA Act environmental assessment process. While in some cases there is clearly some overlap with the CEA Act environmental assessment, in general the level of detail required for these matters (especially for the regulatory decision making process) is greater than that required for the environmental assessment process. Similarly, note that the filing requirements of the NEB are provided in the NEB's Filing Manual, released April 2004, and should be considered in addition to the information provided in this section. Considering that each regulatory agency has a duty and a functional authority, it would be prudent for the proponent to consult with the appropriate authorities to ensure that their regulatory requirements have been satisfied.

### A1.1 Regulatory

The Project is subject to a number of specific federal Acts, Regulations and policies for the proposed route both inside and outside of Jasper National Park of Canada, federally and provincially. These will have to be considered during the planning, constructing and operating the Terasen Pipelines Project in Jasper National Park of Canada. These include:

- NEB Act;
- *Federal Fisheries Act*;
- *Navigable Waters Protection Act*;
- *Species at Risk Act*;
- *Migratory Birds Convention Act*;
- *Canadian Environmental Protection Act*;
- *Federal Policy on Wetland Conservation*;
- *Canada Wildlife Act*;
- *National Historic Sites and Monuments Act*;
- *Transportation of Dangerous Goods Act*;
- *Railway Safety Act*; and
- *Canada Transportation Act*.

In addition, there are several provincial Acts, Regulations and policies that need to be addressed in the assessment for BC, including Mount Robson Provincial Park. These include:

- *permission pursuant to the Park Act for those parts of the Project within Mount Robson Provincial Park*;
- *a boundary amendment process for Mount Robson Provincial Park*;
- *Water Act for works in, or about, a stream*;
- *Wildlife Act*;
- *Environmental Management Act*;
- *Heritage Conservation Act*;
- *Master Plan for Mount Robson Provincial Park*; and

- *any other provincial Acts, Regulations and policies that may be applicable to the Project.*

Note that the onus is on the proponent to identify and adequately address all regulatory requirements.

Each of these Acts, Regulations and Policies – federal and provincial - is to be examined for its application to the Project. In those instances where a duty is triggered, Terasen Pipelines is to formulate and describe the elements of the appropriate course of action.

Also, acts and regulations pertaining to CN rail works, ATCO gas lines, and Telus telecommunication facilities are to be examined and considered for their application to the Project.

The *Navigable Waters Protection Act* (NWPA) triggers particular requirements for consideration and mitigation to safeguard navigable waters. The proponent is to investigate and report on the following topics:

- all proposed works in, on, over, under, through or across any navigable waterway must be clearly identified (if the navigability status of a waterway is unknown, a navigability request should be submitted to the Navigable Waters Protection Program as early as possible for a determination and possible permit authorization). Also, any proposed changes to existing infrastructure in, on, over, under, through or across a navigable waterway should be identified. This would also include any temporary works that may impede vessel Navigational Safety;
- appropriately scaled maps illustrating the location of all existing waterways and in-water works need to be provided. Included should be detailed drawings (both plan and profile views) of the proposed in-water work, as well as existing crossing;
- photographs of the existing conditions at proposed work locations (crossings, upstream and downstream views are required);
- any known waterway user's (including recreational, commercial and traditional) should be identified and details regarding any consultations with these user groups and/or individuals. Baseline information on any known potential vessel use (commercial/recreational) on all water bodies that have pipeline crossings should also be included in information provided under the NWPA. All waterway crossings or works on, in, near or over a waterway may require regulatory approval under the NWPA. The information provided will be as per the NWPA "Approval" requirements and/or as identified by the local NWP Office. It should be noted that this process does not commence until a formal application has been made to the local NWP Office. It should also be noted by the proponent that the NWPA application requires that all physical works be defined and that final drawings, specifications and plans must be submitted once the environmental assessment has been completed;
- plans, descriptions, and duration in place of all temporary works including coffer dams, temporary crossings, or other infrastructure should be provided, in addition to any proposed permanent structures;
- a description of proposed construction schedules and methods for all in-water works; and

- details regarding the predicted impact on navigability and a description of any proposed measures for the protection navigation safety during and upon completion of the proposed Project.

The Federal *Fisheries Act* triggers particular study and reporting requirements pursuant to protection of fish and fish habitat. The following are the reporting expectations for the purposes of addressing obligations under the *Fisheries Act*. A thorough assessment of the aquatic community (fish and invertebrates) and habitat in the study area and around any water-bodies that could be affected by the Project is required. The assessment should include at a minimum:

- identification of the study area, assessment methods and any historical sources and/or previous aquatic assessments or studies used to describe the existing aquatic community;
- identification of any past / present developments and undertakings in the area that may result in a cumulative impact on the study area;
- a description and map of the fish communities and habitat in all water-bodies affected by the Project. Identify areas used for spawning, rearing, nursery, migration or over wintering. Include the common names, life stages utilizing these areas and habitat requirements for these species;
- identification of construction, operation, reclamation activities, including timing schedules and how these might affect fish and fish habitat;
- a description of the effects of stream alterations, placement of in stream structures, changes to bank and bed substrate and stream flow parameter changes such as velocities, discharge and gradients;
- a description of the discharge (quantity, quality and timing) of aqueous contaminants, chemical additives and the potential environmental effects of such releases;
- a description of the mitigation and enhancement measures employed to prevent or minimize adverse effects from the deposit of sediment, deleterious substances and habitat alterations or destruction;
- a description of mitigation to address potential barriers to fish passage during construction resulting from isolation techniques. Should work be done on the floodplain during the closed timing period, a contingency plan outlining mitigation to address potential high water events should be included; and
- an estimate of the area of fish habitat that may be lost and a plan to compensate for any net loss in productive capacity of fish habitat that may result from the Project.

## **A1.2 Social and Economic Considerations**

Social and economic considerations will have different space and time considerations than the natural component. For Parks Canada's interests the social and economic topics will be limited to effects on the park, although it certainly is recognized social and economic effects extend well beyond the park. For Parks Canada the social and economic effects relate largely to concerns about:

- human (including traveller) safety and inconvenience during the construction phase;
- complications in Parks Canada's future plans for upgrading Highway # 16;
- possibly increasing costs for Parks Canada's routine infrastructure maintenance needs;

- complications or exceedance of capacity in infrastructure owned and operated by others, particularly with specific attention to local electrical demand and supply, both present and future. Electrical power supply is limited in the Jasper area since power is locally generated – there is not a provincial grid connection. The impact of the Project must be carefully examined to determine the cumulative effect on power demand, and the implications for accessory projects;
- avoidance and protection of human experience factors including landscape views and aesthetics, recreational trail use, and mechanical noise, for example in sensitive areas such as the entrance to the Snaring River Valley and in the viewpoint/campground area at Mount Robson Provincial Park;
- land use, recreation and visitor opportunities;
- the safe and continued use of all navigable waterways for recreational, traditional and commercial purposes, both inside and outside of Jasper National Park of Canada; and
- capacity of local infrastructure to support changes to utility demand – including in particular the electrical supply.

The scope of social and economic concern about the Project in Jasper National Park of Canada must be defined, in part, during early stages of consultation with stakeholders and interested public.

Furthermore, to the CEA Act definition of ‘environmental effect’ provided in section 3.2 above, Parks Canada (*Parks Canada Management Directive #2.4.2 Impact Assessment*, May 28, 1998) adds:

effects on cultural resources whether or not they flow from bio-physical effects. This assessment will include consideration of the five principles of the *Cultural Resource Management Policy* as outlined in the *Parks Canada Guiding Principles and Operational Policies*.

For BC Parks, socio-economic impacts of interest relate to the predicted economic and social impacts of the Project on the Province. This would include, for example, impacts on the provincial economy such as job creation, investment, procurement, and other Project-related impacts. This information is required pursuant to the BC Parks Boundary Adjustment Guidelines Policy. Similarly, implications to recreation are a matter of concern.